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A REVIEW OF PHYSICO-CHEMICAL STUDIES IN EPILEPSY.*

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Physico-chemical studies in epilepsy are relatively new. Prior to the communication by Brown (1910) on the viscosity of the blood in epileptics there were no reports specifically devoted to these aspects of the problem. Since then a number of such studies have been made in epilepsy. Some investigators dealt with simple physico-chemical properties of blood and cerebrospinal fluid; others, stimulated by the work of Abderhalden and Walter, concerned themselves with enzyme action and with the permeability of the so-called hemato-encephalic barrier. In addition there have been isolated studies on the colloidal changes in the nervous system and cerebrospinal fluid, and on oxidative reactions and electrical changes in the brain. Despite their numerous contradictions, these studies may be regarded as valuable, in that they laid a foundation for a new approach toward problems in epilepsy.

In 1910 Redlich, Pötzl and Hess¹ reported studies in certain patients, some of whom had epilepsy, on the passage of ingested substances into the cerebrospinal fluid. They were interested mainly in determining if epileptic patients differed from normal persons in this regard. The work was suggested by the theory that the epileptiform seizure is a response to the presence of toxic substances in the cerebrospinal fluid. Three grams of sodium salicylate were given in the 24 hours just prior to lumbar puncture to normal persons, to one patient with epilepsy and one with tuberculous meningitis. In no instance was the drug found in the cerebrospinal fluid; it was found in the urine of all subjects. The same result was obtained with methylene blue in three persons with epilepsy. This was said by the authors to be the case in normal persons. It had been reported previously that ingested iodide did not appear in the cerebrospinal fluid of normal persons; these authors found

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this to be the case in two patients with epilepsy, one with cerebral diplegia, and one with infectious meningitis. They stated that the disagreement existing up to that time as to whether bromide passes into the fluid was due to the use of insufficient doses and defective methods. They used a method in which the presence of bromide was determined colorimetrically by chlorine water and chloroform acting upon the alkalinized residue after evaporation. One epileptic patient was given a single dose of 3.0 grams of sodium bromide; later, bromide was found in the urine and none in the spinal fluid. Another epileptic patient was given 4.0 grams of bromide daily; after taking this for five days no bromide was found in the spinal fluid; but after taking bromide for 17 days it was found in the fluid. Three other patients with epilepsy showed similar findings.

Redlich, Pötzl and Hess found no precipitins in the spinal fluid of a person with epilepsy one week after the injection of 15 cc. of horse serum, but precipitins were found after a second injection over a longer period. They concluded that no difference existed between normal persons and those with epilepsy in the extent to which substances introduced into or generated within the body pass into the cerebrospinal fluid from the blood. They believed that other opinions were based on experiments with inadequate technique. No mention was made of the type of epilepsy studied or of the possible relationship of seizures to their findings.

Following the studies of Redlich, Pötzl and Hess, few reports appeared upon the permeability of the hematoencephalic barrier in epilepsy until 1926. Then, following the work of Walter, who had devised a method for determining that permeability quantitatively, a number of studies were reported on epileptic persons. The degree of permeability was then expressed by the ratio of bromide in the cerebrospinal fluid to that in the blood at the end of a given time after the administration of a given dosage of sodium bromide. Buchler² made 252 determinations in persons with various neurologic diseases, including six with epilepsy. In these he found the permeability increased in three instances, decreased in one, and normal in two. From his studies Buchler concluded that this method revealed no characteristic findings for any disease. Patterson and Levi,³ who did not use Walter's method, conducted two sets of experiments on patients with epilepsy. In one they injected intramuscularly 1.0 grams of sodium iodide 12 hours before spinal

puncture; in the others, 2.0 grams of sodium nitrate were injected three hours before. In no instance did they find a trace of the anion in the spinal fluid. Normal persons gave similar findings. Bau-Prussack and Prussack,⁴ Weil,⁵ and Malamud, Fuchs and Malamud⁶ reported data obtained with Walter's method in a total of 29 cases, which, with the 51 cases studied by Walter, makes a total of 80 cases. Malamud, Fuchs and Malamud studied five patients with epilepsy and found no significant variations in the permeability quotients from that obtained in normal persons by Walter.

In 1929 Walter⁷ published a monograph on the problem of the hemato-encephalic barrier in which he presented a review of the subject and reported the findings from 51 determinations made by him in 45 patients with epilepsy. His results are shown in Table I, together with those of Bau-Prussack and Prussack, Buchler, and Weil.

TABLE I.

THE PERMEABILITY RATIOS FOUND BY SEVERAL AUTHORS IN PATIENTS WITH EPILEPSY.

Authors.	Permeability ratios.			
	Less than 2.8	2.8 to 2.9	2.9 to 3.5	Over 3.5
Bau-Prussack and Prussack.....	1	3	3	1
Buchler	0	1	4	0
Walter	(4)	1	33	13
Weil	2	2	10	2
—	—	—	—	—
Total no. of patients.....	7	7	50	16

Walter believed that the four patients in whom he found increased permeability had organic or symptomatic epilepsy. He did not say whether the 13 patients with decreased permeability had idiopathic or symptomatic states. He stated that the permeability quotient remained constant in the interval, immediately after an attack or in status. He could not disprove that the relation of seizure to quotient may have been an intimate one; for he recognized the possibility that the fluctuations might occur too rapidly or that these fluctuations might be too small to be detected by the method used.

In 83 persons with epilepsy Katzenelbogen⁸ reported values for the permeability ratio as follows: Above 3.3 (decreased perme-

ability) in 14 instances; between 2.9 and 3.3 in 34; and below 2.9 in 35. This is at variance with the results summarized in the above table.

Mishkis, Ritchie and Hastings,⁹ after using an electrometric titration method, concluded that values obtained by Walter's technique are too inaccurate to be acceptable. In a patient with eczema, another with luetic aortitis and in a third with duodenal ulcer they found values of 1.97, 1.57, and 1.92, respectively. In three persons with general paresis they found values of 1.44, 3.50, and 2.00, and in one patient with epilepsy a value of 2.05 was found. This is at variance with the findings of Walter, who accepted 2.8 and 3.5 as the normal limits. These writers stated that the amount of chloride plus bromide in the blood compared with that in the fluid gave a rather constant ratio; in four instances this varied from 0.83 to 0.89. This value agrees fairly well with values found for the chloride ion without the administration of the bromide and is also fairly close to the theoretical value of 0.95, which the ratio should have, according to the Gibbs-Donnan law, if the ions in question are freely permeable between blood and spinal fluid.

In summarizing studies upon the hemato-encephalic barrier in epilepsy, it may be stated that it is questionable whether the methods used by most workers are reliable. Nevertheless, no consistent increase or diminution of the value for the barrier permeability has been reported. In a number of instances these values were found just below or just above the normal variation.

Some investigators studied the relation of epilepsy, or, more specifically, of the convulsion, to permeability within the central nervous system.

Fröhlich and Zack¹⁰ studied this problem in experimental convulsions. They found that in the frog, upon the injection of 0.00012 gram of theophylline per gram of body weight, convulsions occurred upon the injection of only 0.4 gram of acid fuchsin per gram of body weight. Without the presence of theophylline, acid fuchsin in such doses produced no convulsions. Further studies showed that the animals which were given theophylline showed a greater concentration of acid fuchsin in the central nervous system than did those which were not so treated. Fröhlich and Zack also found that theophylline rendered the frogs more susceptible to the convulsant action of sodium ferrocyanide. Studies of the tissues of

these animals showed the presence of increased amounts of sodium ferrocyanide in nervous tissue and in muscle. These investigators also showed that fluorescin is absorbed in greater amounts if given after the administration of theophylline. These writers reported that depressing agents such as morphine and magnesium chloride are more effective if given with theophylline. Fröhlich and Zack believed that theophylline did not produce convulsions; nor did they believe that theophylline enhanced the action of convulsant agents only, since they found that anti-convulsants were also rendered more effective in the presence of theophylline. They concluded, therefore, that theophylline renders both convulsants and anti-convulsants more effective by aiding absorption. They were unable to decide whether theophylline aided in the absorption of the convulsant at the site of injection or at the site of action, and they felt that it exerted an effect in both places. They doubted whether theophylline affected all processes of the neurone; and they believed, furthermore, that the entire question was obscured by the fact that theophylline had been shown to retard the absorption of highly colloidal dyes injected subcutaneously.

Syz¹¹ reported the results of experiments which led him to believe that in frogs injury to the brain and asphyxia increased the convulsive action of acid fuchsin. He also found an increased amount of dye in the nervous system. Occasionally in the asphyxiated animals there was an increased response to the convulsant without an increase in the amount of dye in the nervous system. These experiments present more complicated features than the mere effects of a drug; the rôle played by contributing factors must be great.

Recently the permeability of nervous tissue has been studied from a new viewpoint by the Spiegels.¹² They described an apparatus with which they attempted to study the effect of so-called epileptogenous factors on the permeability of the nerve cell. Their apparatus measured the electrical conductivity of the tissue to alternating currents of varying frequency between two electrodes introduced into the brain. Normally the more rapidly alternating currents were conducted with less resistance. The difference in conductivity between the rapidly and slowly alternating currents was said to depend on the polarization of the cell membrane; this difference was called "delta." As permeability decreased, the

value of delta was said to increase and vice versa. The method was used in animals as well as in human beings under an anesthetic. The grey matter was found to have a much higher delta than the white, which was said to indicate its relative impermeability. In states of asphyxia the value for delta in the cerebral hemispheres and in the basal ganglia was decreased; this supposedly indicated an increased permeability. A diminished value for delta was also found in states of cerebral anemia produced by the ligation of vessels. Increase in intracranial tension, hydration (by introduction of distilled water intravenously, or that associated with alkalosis), alkalosis and hyperventilation produced a diminution in the value of delta (increased permeability), while acidosis was found to have little effect. At operation a low delta (high permeability) was found in patients with hypertension and increased intracranial tension, and in two patients with symptomatic epilepsy (chronic encephalitis and trauma). Narcotics were said to have an effect the reverse of that of alkalosis. From this work, the authors concluded that convulsive activity is an expression of varying relationship between excitability and permeability of cellular surfaces.

Study of colloids in epilepsy has not as yet been the subject of extensive investigation; a thorough search of the literature disclosed but few articles on this subject, written mostly by Georgi.^{13, 14, 15}

He studied the blood in persons with epilepsy with reference to the red blood cell count, sedimentation time, flocculation of plasma proteins by NaCl, and electrical resistance. He concluded that the underlying mechanism of the epileptic attack is a change in the colloidal character of the nerve cell membrane in response to a primary humeral disturbance. This disturbance changes the permeability of the cell membrane, thus permitting the entrance of excitatory factors.

At the International Neurological Congress in 1935 there were reported the results of studies of cerebral action-currents in epilepsy. Gozzano¹⁶ described changes in the action current in the brain during convulsions induced by stimulating a cortical area previously painted with strychnine. Lennox¹⁷ stated that petit mal attacks are invariably preceded or accompanied by an increase of electrical activity of the cerebrum with an increase in voltage up to 10 times the normal value and with a reduction in the frequency

of recorded oscillations by one-fifth the normal value. Clonic movements, if present in an attack, were said by Lennox to be synchronous with the waves of electrical activity in the cortex, while voluntary movements were not accompanied by this phenomenon. Each subject was said to have a characteristic curve. In some patients, prior to an attack Lennox found minor changes in the rhythm, which he thought might indicate imperceptible attacks or a state just preceding these. He found that alkalosis, anoxemia and anemia produced similar changes in the electronecephalogram.

Gibbs, Davis, and Lennox¹⁸ reported studies on the electronecephalogram in 12 patients with petit mal attacks and in nine with grand mal seizures. They described disturbances in the normal rhythm of electrical waves during an attack. All attacks, both grand mal and petit mal, were said to show such changes, and in addition "larval attacks" were said to occur which did not produce visible convulsions but did cause a variation in the previously normal electrical wave rhythm in the patient's brain. Clonic movements during a seizure were said to be synchronous with more marked alterations in the rhythm also. They found that a simulated attack did not produce electrical changes in the brain.

Studies of the physical constants of the spinal fluid in epilepsy have revealed little of significance. Thabius and Barbe,¹⁹ in patients with "idiopathic" epilepsy (all of whom had mental changes), studied the cerebrospinal fluid for density, freezing point, viscosity and surface tension (18° C.). Changes were found only in the density of the fluid; this was found to be increased. In normal persons they found the density of the fluid to be 1.0053, 1.0057, and 1.0027 at temperatures of 15° , 18° , and 20° C. respectively; in epileptic patients at the same temperatures these values were found to be 1.0070, 1.0075, and 1.0055. The freezing point of fluid of normal persons was given as -0.50; this figure for persons with epilepsy had a mean value of -0.57 with a range of -0.53 to -0.61. Thabius and Barbe found that fluid from patients with epilepsy had an average viscosity of .00744; this figure was not compared with that of the fluid of normal persons. There is as yet little agreement on the subject of the normal values for the viscosity and surface tension of spinal fluid (Levinson²⁰). Levinson and Serby²¹ examined the refractive index of the spinal

fluid of 11 persons with epilepsy and found indices of 1.33493 to 1.33517; these vary within the normal range.

Numerous observations have been made on the cerebrospinal fluid pressure in epilepsy. Lennox and Cobb²² found that nearly 20 per cent of some 200 unselected cases of epilepsy had pressures above 200 mm. of fluid, but six of these at operation or autopsy were subsequently found to have brain tumors. Nawratzki and Arndt,²³ Larkin,²⁴ and Tilman²⁵ agreed that approximately 66 per cent of persons with epilepsy have an increased spinal fluid pressure, whereas Redlich and Pötzl²⁶ and Wittengenstein²⁷ found that slightly more than half of such patients had a pressure above 200 mm. of water. In 50 persons with epilepsy, in whom spinal puncture was made in a sitting position, Patterson and Levi³ reported spinal fluid pressures ranging from 81.6 mm. to 516.8 mm.

No statements are available in the literature regarding fluctuations of spinal fluid pressure on the Queckenstedt manœuvre in persons with epilepsy. Lennox and Cobb²² stated that it is generally agreed that there is a rise in spinal fluid pressure during the seizure, which is easily understandable in view of the changes in vascular pressure that occur during the seizure. They found that during the petit mal attack there was no increase in spinal fluid pressure. It appears that there is no conclusive evidence of a change in intracranial pressure in epilepsy, except for the one occurring during the convulsion, which is probably secondary and associated with vascular changes of a general nature. Elsberg and Pike²⁸ reported that increased intracranial tension rendered animals more susceptible to experimental convulsions; this relationship of increased pressure to convulsions has not been observed in man. Dalma²⁹ failed to induce convulsions in 35 patients by increasing intracranial tension through jugular compression. It has been pointed out that in persons with brain tumor, convulsions may be more frequent in the early stages, while the pressure is low. Furthermore, Lennox and Cobb²² stated that patients with higher cerebrospinal fluid pressures did not usually have more severe or more frequent seizures.

Eckel³⁰ found that the specific conductivity of spinal fluid in 100 epileptic persons varied from 0.01575 to 0.01423 with an average of 0.0149978; these variations were regarded by him as being within the normal range. Lennox and Cobb²² advanced the

hypothesis that if colloidal changes within the central nervous system play a rôle in the production of seizures, one might expect similar changes in the colloidal reactions of the spinal fluid. In nearly 200 specimens of spinal fluid examined they found 91 per cent were entirely normal; in only 31 per cent was a height of three obtained in the Lange gold curve. Larkin²⁴ found a similar height attained in 7 per cent of 114 cases. Patterson and Levi³ reported that of the spinal fluids of 50 patients with epilepsy, 91 per cent had abnormal findings.

There are many reports on the blood in epilepsy. These studies were carried out with the hope that disturbances in the blood would reveal an important disturbance in metabolism. In this review we shall discuss those reports dealing with physico-chemical factors and enzyme content.

Dide³¹ stated that the specific gravity of the blood in epileptic persons was lowered just before a seizure. Brown³² found that the blood of 15 persons with "epileptic insanity" had an average specific density of 4.8; the same value for the blood of normal persons was 4.2; in seven instances the blood of the epileptic persons had a specific density as high as 5.0 to 5.9; the highest value obtained in normal persons was 5.3, and that only in a single instance. Brown stated that just before an attack there was an increase in blood viscosity with a subsequent slow diminution. He stated that increased viscosity of the blood was correlated with increased severity and frequency of seizure. Georgi¹⁵ stated that Meyer³³ also found a decrease in the blood viscosity during the seizure. Zilocchi³⁴ agreed with Brown that there is an increase in blood viscosity just before the seizure. Refractometric studies of the blood serum have been made with the intention of utilizing the refractive index to express the value of the blood albumen. However, the discrepancy between this method and the Kjeldahl method is too great to enable the refractive index of the blood to indicate the amount of serum albumen.

We were able to find but a single report dealing with the electrical conductivity of the blood in epilepsy. Waschetko and Selitzky³⁵ studied the changes in the electrical conductivity of the blood in the rabbit during convulsions induced by stimulation of the motor cortex. No significant changes were found in two animals studied.

There are several reports of studies of blood enzymes in epilepsy. These were, in large part, inspired by the early work of Abderhalden.³⁶ He suggested that the technique he utilized in the study of placental lytic enzymes in the sera of pregnant women might be used in the study of nervous and mental diseases. He thought that the destruction of nervous tissue would liberate foreign proteins into the blood and that these would induce the production of protective lytic enzymes, the presence of which could be tested for. He also suggested the use of other organs, especially the gonads, since there was some relation between the onset of certain psychoses and puberty.

Kafka³⁷ studied the blood enzymes in 11 patients with epilepsy. In one instance he found a lytic enzyme for spinal cord tissue; in several other instances there appeared a similar enzyme for brain and for thyroid substance; but in the case of the latter two the results were doubtful. In a group of 16 persons without disease used as a control he found no lytic enzymes in the blood for adrenal, thyroid, ovarian, spleen, placental, brain, cord or hypophyseal tissue. From his experiments he concluded that neither seizure, status nor post-convulsive stupor produces changes in the blood enzymes. Fischer³⁸ tested the sera of 16 patients with epilepsy for lytic enzymes for brain substance; the result was positive in a single instance. Binswanger³⁹ stated that in seven patients he found evidences of lytic enzymes for brain tissue up to five days after the seizure; in one patient, 14 days after the seizure this reaction was absent. He advanced the hypothesis that the epileptic attack is associated with breakdown of brain tissue and cited in support of his theory the views of Alzheimer and Vollard, who believed that there was evidence of destruction of brain tissue in persons that died after a convulsion. Binswanger thought that this destruction in the non-deteriorated patients might be repaired without loss of function and that in deteriorated patients glial scars might result. He also thought that by means of studies of blood enzymes it might be possible to recognize those cases in which there was destruction of brain tissue between seizures; these cases he believed would ultimately deteriorate. Accordingly, he studied the sera of 15 patients six days or more after the attack; in nine instances he found evidences of an enzyme for brain tissue; in six instances this substance was absent. Binswanger also used the test to dis-

tinguish between the epileptic and hysterical phenomena; in the latter he held that no lytic enzyme for brain substance could be found in the sera.

Maas,⁴⁰ Neue,⁴¹ Wegener,⁴² Theobald,⁴³ Pesker,⁴⁴ Golla,⁴⁵ Runge,⁴⁶ Kirchberg,⁴⁷ and Grigorescu⁴⁸ performed similar experiments; their results failed to corroborate those of Binswanger. Ewald,⁴⁹ after reviewing all previous work and his own study of 15 persons with "genuine" epilepsy, most of whom were demented, came to conclusions in agreement with those of Binswanger. He believed that although the method did not lead to the detection of specific enzymes, it might be applied with profit in the study of epilepsy if carefully controlled technique were used, and if interpretations were judicious.

Oxidative enzymes have also been studied in epilepsy; it was thought that disturbances in the elaboration of these might play a rôle in the pathogenesis of the disorder. Lachten,⁵⁰ in 1926, studied blood catalase in patients with epilepsy and found consistent deviation from the normal. Sachs and Zander⁵¹ reported studies of the blood peroxidase and catalase in epilepsy. In patients with epilepsy they found that the blood catalase varied between 11.9 and 16.7 with a mean of 14.3; corresponding values for normal subjects were 14.6, 19.4, and 16.6. They considered these differences statistically significant. The presence in the blood of guanine sulphate, alcohol, acetaldehyde, caffeine and xanthin are known to retard the action of catalase; Sachs and Zander performed experiments which led them to believe that these substances did not influence their results. In patients with epilepsy they found that the blood peroxidase varied from 6.5 to 15.6 with a mean of 11.0, while in normal persons this varied from 11.2 to 16.6 with a mean of 12.9. These differences they also considered statistically significant. The authors made no attempt to relate the values found to the occurrence of attacks or any other clinical features of the disease. Waschetko and Selitzky⁵⁵ studied blood catalase in two rabbits with convulsions induced by electrical stimulation of the cortex and found no significant changes.

Some observations have been made upon the capacity of the epileptic patient's blood serum to inhibit tryptic digestion of casein. Jach⁵² reported that in patients with epilepsy there is, in most instances, an increase in blood antitrypsin and especially so in status.

Rosenthal⁵³ stated that as the attack approaches there is an increase in blood antitrypsin and that following the seizure there is a return to normal. He believed that in epileptic women there was an increase in the premenstrual rise of this enzyme. Rosenthal suggested that the mechanism of this increase in antitryptic activity was the accumulation in the blood of either breakdown lipoids from the central nervous system or possibly intermediary products of albumin splitting, all of which might be regarded as manifestations of an underlying metabolic disturbance. Pighini,⁵⁴ Justschenko,⁵⁵ Pfeiffer and deCrinis,⁵⁶ and Zimmerman⁵⁷ corroborated Rosenthal's findings. Bolton,⁵⁸ however, was of the opinion that such elevations in relation to the seizure existed only in the organic type of epilepsy, whereas in the idiopathic type, exclusive of those which deteriorate, there was no abnormal increase of blood antitryptic enzyme either before, during or after an attack. The view of deCrinis⁵⁹ is interesting because he believed he had conclusively shown that the increased antitryptic effect of the serum at the time of the seizure was correlated with an increase in blood cholesterol. He based this on the findings that the level of the blood cholesterol paralleled that of the antitryptic titre, that ether would precipitate both the cholesterol and antitrypsin from the blood serum, and that cholesterol was known to be an inhibitor of tryptic digestion.

Wuth⁶⁰ summarized these studies very well in 1922. He stated that these authors did not take into account general body conditions such as the presence of tuberculosis, diabetes, chronic infections, carcinoma or cachexia, all of which may cause an elevation in the antitryptic titre. Furthermore, he considered the methods used by other workers as inaccurate. He studied 33 patients with convulsive seizures, some of whom had organic disease such as brain injury, eclampsia, etc. He could not find a significant change in the antitrypsin titre. Frisch and Walter⁶¹ found an increase in the antitryptic titre in three patients with epilepsy.

In conclusion, it might be stated that physico-chemical studies have as yet thrown very little light on the etiology, pathogenesis and pathologic physiology of epilepsy. These studies have been vitiated at times by defective methods or inadequate controls, at other times by faulty observation and the study of too few patients. It is possible, however, that similar studies made in the future, without these defects, may yield a body of knowledge very important for the understanding of epilepsy.

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CONDUCT DISORDERS OF INTELLECTUALLY SUBNORMAL CHILDREN.*

A STUDY OF CORRELATIONS OF INTELLIGENCE LEVELS OF EIGHTY TO EIGHTY-NINE, TO BEHAVIOR DISORDERS OF CHILDREN.

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Since the introduction of psychometric tests the rôle of mental retardation in the causation of incorrigibility, delinquency, criminality and many other forms of antisocial behavior has been fairly definitely established. Not only have the pitfalls confronting the mentally defective child been pointed out but the possibilities for maladjustments of the intellectually superior child have also been made the subject of exhaustive studies. Many studies have been reported concerning the relation of antisocial behavior and level of intelligence. All are agreed that there is a positive correlation between behavior disorders and mental deficiency. The degree of this correlation, however, has been stated differently by different investigators. Early investigators found as many as 85 to 90 per cent of delinquents to be mentally retarded. Later estimates are more cautious and conservative. According to Pintner,¹ the proportion of feeble-mindedness among apprehended juvenile delinquents is about 10 to 15 per cent. Ackerson² finds that this conclusion is also valid when applied to his series of cases of older or adolescent children, regardless of the fact of a police arrest or juvenile court appearance or commitment. This group was studied from the standpoint of "conduct total" or what may be interpreted as general behavior disorders.

The findings at the Child Guidance Home³ are in close accord with those of Pintner and Ackerson. The proportion of feeble-mindedness among the first 1000 children who were admitted for study was 15.7 per cent.

* Read at the ninety-second annual meeting of The American Psychiatric Association, St. Louis, Mo., May 4-8, 1936.

J. Levy⁴ in a study of 700 children whose intelligence quotients ranged above 80, found that the percentage of children showing personality and emotional problems increased definitely with the intelligence quotient level, while the number of children with delinquency problems showed a definite decrease with the increase in the intelligence quotient level.

No one is surprised when it is discovered that the school truant is mentally defective. Neither are we shocked when examination of the sex delinquent girl reveals the fact that she is feeble-minded. Every thinking person realizes that the mentally deficient child is suffering from a severe handicap, a handicap that may lead to serious behavior difficulties. The variations of the intelligence quotient from the average in these groups are, in the majority of cases, sufficiently great to permit their detection very often through observation alone and without the formality of a psychometric examination. The same situation to a somewhat lesser degree applies to those children whose intelligence level rates them as cases of probable mental defect.

The status of the intellectually subnormal children, that is, children whose intelligence quotients range between 80 and 89, is, however, entirely different. Very little has been written about them. These children do not appear mentally retarded or deficient. Their intellectual level can only be determined by means of individual psychometric examinations. They very often do fair work in school, especially in the lower grades. They may even receive an average or superior rating on the so-called psychological group tests. For this reason more is expected of them than what they are able to accomplish. As a result, such a child may find himself in a class unsuited to his mental ability. Older high school students may find themselves trying to master advanced school work which throws a great strain upon their capacities. Lack of adjustment in school is a well-known cause of delinquency. Similar maladjustments may occur in industry and for the same reason. These children very often become problem children because of the lack of understanding of their intellectual limitation. More is expected of them, especially academically, than they are capable of accomplishing. Unless due allowance is made by those in charge of these children for their mental handicap, slight as it is, it must be obvious that serious maladjustments may result.

In the first series of 1000 children studied at the Child Guidance Home, 15.7 per cent rated as definitely feeble-minded and 18 per cent rated as borderline cases of probable mental defect. In contrast to this, 22.5 per cent rated as subnormal. These children presented behavior problems ranging in complexity from relatively simple problems as temper tantrums and disobedience to such serious and highly complicated problems as pyromania and murder.

The object of this study was to determine (1) the nature of the problems presented by the children who rated subnormal intellectually, that is, whose intelligence quotients ranged between 80 and 89; and (2) the correlations, if any, between their behavior difficulties and the subnormal intelligence. The age range of these children was from 4 to 18 years. One hundred and thirty-six were males and 89 were females.

Table I presents an analysis of the behavior difficulties for which the children were referred for observation to the Child Guidance Home. The reasons for admission have been classified into a small number of categories, 11 in all, so that the data derived from such an analysis could be more readily handled. Many of these children presented more than one problem. In such cases the primary or outstanding problem was considered as the presenting symptom and classified accordingly.

TABLE I.

Reason for referral.	Number		
	Male.	Female.	Total.
Incorrigibility	43	17	60
Delinquency	14	9	23
Truancy	10	..	10
Sex Delinquency	2	10	12
Failure at School.....	34	12	46
Mentally Dull	11	11	22
Nervousness	9	12	21
Peculiar (Abnormal) Conduct	2	4	6
Speech Defect	4	2	6
Physical Disabilities	6	12	18
Inability to Adjust in Industry	1	..	1
 Total	 136	 89	 225

It will be noted that the first four items, all of which can be considered various forms of delinquency, constitute almost half of the

total number of the reasons for admission. In this group there are 69 boys and 36 girls, a ratio of approximately 2 to 1. This proportion is relatively greater than the ratio of boys to girls in the entire series, which is 1.5 to 1.

The second largest group was referred because of failure at school. More than 20 per cent of the children in this series were referred for study because of inability to do satisfactory work at school. This is very significant. Furthermore, the majority of the children began to experience difficulties in their academic progress between the 9th and 12th years. In other words, beginning with the fourth grade of school, these children found the school work more and more difficult. These findings are all the more significant because of the common belief among educators and psychologists that an intelligence quotient between 80 and 89 is sufficient to permit a child to carry the work of the grade school satisfactorily. Our findings would indicate that such a supposition is not in accord with the facts.

In this connection it is interesting to note that only 22 children were referred for observation because they appeared to be mentally dull. This bears out very strikingly the statement previously made that the majority of the children in this group are looked upon as possessing normal intelligence and are therefore expected to act accordingly. Practically all those thought to be mentally dull were referred by teachers. As usual, the parents were either oblivious to their children's mental limitations or wilfully refused to admit the existence of such a possibility.

These children are very often grouped with children of normal intelligence because of their ability to pass the psychological group tests satisfactorily. This is very unfortunate because in such instances, that is, where the child receives a normal rating in the group tests, the failure to do satisfactory work in school is thereupon naturally ascribed to other causes, such as laziness and indifference, and the results are very often disastrous to the child. Only by means of individual psychometric examinations can the true state of affairs be discovered. Group tests are of value principally as a means for determining quickly extreme variations among a large number of individuals.

The number in the four remaining groups of reasons for referral, namely, nervousness, peculiar or abnormal conduct, speech and

physical disabilities totals 51. Of this number, 21 were boys and 30 were girls. This proportion is exactly the reverse of the proportion in the other groups, and of the proportion of boys to girls in the entire series. Last year, the essayist³ in a report on the results of a study of 1000 cases of children presenting behavior disorders, stated that psychoneurotic states were more prone to cause behavior difficulties in girls than in boys, the percentage in the series being 20 for girls and 11.9 for boys. The following statement was made, "the greater emotional instability of women as compared to men has long been an accepted medical fact but the figures here given would seem to indicate that this difference in emotional instability between the sexes already exists in childhood." The present findings apparently tend to corroborate this statement.

In attempting to make a correlation between behavior difficulties or conduct disorders, and subnormal intelligence it must always be borne in mind that both conditions might be related to some more fundamental factor, which might be the causal factor involved. It may prove fallacious to reason from correlation to direct causal connection. However, in this series of cases, it was possible to determine (1) the number of cases in which the subnormal intelligence was the sole or dominant causal factor, (2) the number of cases in which the subnormal intelligence was but one of two or more causal factors, and (3) the number of cases in which the subnormal intelligence was merely incidental to other factors responsible for the behavior difficulty presented by the child.

According to this division, there were 40 cases in which the intellectual subnormality was the etiological factor responsible for the conduct disorder. In 97 cases, other factors in addition to the intellectual deficiency were responsible for the problems, and in 88 cases the intellectual status played but a very minor rôle, if any, in the causation of the specific problems presented by the children.

In other words, in almost 18 per cent of the cases in this series, there was a direct and positive causal relationship between the intelligence level and the behavior difficulty. This fact assumes greater significance when it is realized that this series of 225 cases was part of a series of 1000 cases of behavior disorders studied at the Child Guidance Home, in which the incidence of deviations in intellectual level as direct causal factors in the production of conduct disorders, was only 3.8 per cent. Stated differently, in the

entire group of 1000 cases there were 83 children whose problems were due to the fact that they deviated from the average normal in their intelligence quotients. Deviations both above and below the normal average were included. Practically half of this total, therefore, was found in the group of those with subnormal intelligence. In other words, this group alone accounted for as many behavior difficulties as all the other groups of intellectual deviations combined.

The problems presented by this group of 40 centered principally about maladjustment in school. Next in order of frequency came problems of incorrigibility, truancy and last, problems concerned with emotional disturbances.

While it is true that one must be careful not to generalize from such a small number of cases, still it is fair to say that the data presented makes the recognition of the potentiality of subnormal intelligence as a causative factor in the production of delinquency and other forms of antisocial behavior of extreme importance.

It may be also interesting to note that in this series of 225 children, 48 or over 21 per cent were found to be psychoneurotic, psychopathic or psychotic. Seven of the children were diagnosed as schizophrenic. This is a very high incidence.

The following brief case reports illustrate many of these facts:

CASE I.—Paul V., white, age 10 years, was admitted for observation because he was a behavior problem both at home and at school. He was inattentive, uncontrollable, stubborn, unable to concentrate and subject to severe temper tantrums. According to the parents, the boy was perfectly normal until he entered school. Since that time all his unpleasant traits have come to the fore and are steadily growing worse.

The developmental history of the patient was entirely negative except for the persistence of enuresis up to the age of eight. The personality evaluation showed that the boy was very active in play but had no ambition for anything else. He was very impatient and irritable. Although he loved his dog he would kick it if it did not do what he wanted immediately. He was resentful of correction. He tired very quickly of everything he did. He often told lies and exhibited temper tantrums during which he would curse and swear. Occasionally he stole money at home but never admitted the charge. He never stole outside his own home. Disciplinary measures consisted principally of whipping.

The boy entered a parochial school at the age of six. He hated school but was never truant. At present, he is in the fifth grade and is doing very poor work. In addition, he annoys the other children and is a disturbing element in the classroom.

When the boy arrived at the Child Guidance Home, he made himself at home immediately and seemed to be a friendly talkative child. He was rather bold in manner, mischievous and seemed indifferent to instructions. He had a short span of attention as well as of interest. He did not like to do work and would resort to subterfuges in order to avoid helping with the chores. He had occasional temper tantrums and was quite irritable at times. He was always ready to argue or fight with the younger children but never with anyone his own size. During a conversation, the boy stated definitely that he did not like school. "I don't know nothing. Nobody told me, I know myself. I don't do nothing in 'rithmetic and spelling. I like reading and geography, that's all." Paul stated that his brother and sister were smarter than he. He realized that he could not learn when he was in the third grade. "I'd like to go to a school where I can work like I do here" (manual training).

The physical examination as well as the neuropsychiatric examination were essentially negative. On the Stanford Revision of the Binet Simon scale, the boy had a chronological age of 10 years and eight months, a mental age of eight years and two months, and an intelligence quotient of 80.

The following diagnosis was made: The problem that Paul presents centers around his intelligence quotient which is 80. This ranks him as a boy of subnormal intelligence and accounts for his inability to make satisfactory progress at school. His incorrigibility and delinquencies are merely reactions to his failure at school. The boy has insight into his condition but in spite of this has been unable to adjust. The behavior difficulties are merely expressions of resentment at being an academic failure.

Placement in a special class for retarded children was recommended. Future adjustment along vocational lines was also advised.

Comment.—Very little in the way of comment need be added. The diagnosis expresses very succinctly the entire situation. The unusual feature in this case is the fact that the boy had insight into his condition. He realized that he was an academic failure due to his own mental limitations. This led to the development of an emotional conflict, a conflict that he resolved as existing between himself and his environment. His rebellion therefore took the form of antisocial behavior.

CASE II.—Teresa L., white, age 14 years and 7 months, was referred for study because of failure at school and because of minor behavior difficulties at home.

The developmental history of this girl was normal. She had the ordinary diseases of childhood. The personality evaluation showed that she had a kind and gentle disposition, was very shy and did not exhibit temper tantrums. She accepted instruction well and applied herself willingly to whatever task she was assigned. Teresa was a follower and easily influenced. She was, however, easily discouraged.

She entered school at the age of seven and did satisfactory work until she reached the ninth grade of school. In that grade she made no progress whatsoever. She showed a special aptitude for history but could not master any of the other subjects. She apparently took more interest in outdoor games than in her school work.

The family history was negative except for the fact that the mother had been committed to a state institution for the insane with the diagnosis of dementia praecox, about eight months after the birth of the patient.

When admitted to the Child Guidance Home the girl acted like a shy, timid little child. She had a placid temper and was very tractable. She was patient and affectionate and was very kind to the younger children with whom she liked to play. She was highly impressionable and easily influenced. Her reactions were slow. She forgot easily and for this reason did not carry out orders well. She volunteered to do work, but her work was only fairly well done. At times she showed peculiar mannerisms and personality traits. Although as a rule she was very neat about her person and took great pride in her possessions, there were times when she was very untidy both about herself and her room. During these periods she was indifferent to criticism and correction.

The physical examination was entirely negative. On the Stanford Revision of the Binet Simon test, the girl had a chronological age of 14 years and 7 months, a mental age of 12 years and 5 months, and an intelligence quotient of 85. On an Otis group test given the year before, the girl had received a percentile rank of 71.

The following diagnosis was made: Teresa is a girl of subnormal intelligence who had found academic work at the Junior High School too difficult. In addition, the girl shows personality traits that must be viewed with great concern in view of the fact that her mother suffered from dementia praecox.

Vocational guidance was recommended. It was also advised that the girl be shielded from undue mental stress and strain.

Comment.—This case is of interest in that it demonstrates that too much stress should not be laid on the value of group tests. On the Otis group test the girl received a percentile rank of 71. This gave her a superior rating as the percentile rank of 71 corresponds to an intelligence quotient on the Binet Simon scale of 110 or higher. She, therefore, should have been able to carry ninth grade work easily and satisfactorily. That she did not live up to this expectation was not due to lack of interest or desire on her part but due to the fact that she was definitely limited intellectually. This was proven when the girl was given an individual psychometric test and her intelligence quotient was found to be 85.

Lack of recognition of the girl's intellectual subnormality was fraught with still another danger. The family history indicated a bad mental heredity on the maternal side. The patient herself

showed personality traits and mannerisms which although not outspokenly pathological, were still, in view of the hereditary taint, highly suspicious. Continued pressure on such an individual to do work of which she was incapable, might easily have precipitated a psychotic episode.

SUMMARY AND CONCLUSIONS.

Many studies have been reported concerning the relation of antisocial behavior and level of intelligence. The majority of these studies have concerned themselves with the mentally defective or feeble-minded. A few have concerned themselves with the intellectually superior or gifted individuals. However, very few, if any, studies have been made of the intellectually subnormal, that is, of those whose intelligence quotients range between 80 and 89.

The children that fall in this category do not appear mentally deficient. Their intellectual status can only be determined by means of individual psychometric tests. They very often do fair work in school especially in the lower grades. They may even receive average or even superior ratings on the psychological group tests. For this reason more is expected of them academically than they are capable of accomplishing. As a result, serious maladjustment may occur.

In a series of 1000 children studied at the Child Guidance Home, 15.7 per cent rated as definitely feeble-minded; 18 per cent rated as borderline cases of probable mental defect; and 22.5 per cent rated as subnormal. The behavior problems presented by these children ranged from temper tantrums to murder.

The object of this study was to determine, (1) the nature of the problems presented by the group of children who rated subnormal intellectually, and (2) the correlations, if any, between their behavior difficulties and the subnormal intelligence.

The group consisted of 136 boys and 89 girls and their ages ranged from 4 to 18 years.

Almost half of the number of reasons for referral had reference to various forms of incorrigibility and delinquency. Of the 105 children in this group, 69 were boys and 36 were girls. This ratio of boys to girls is greater than the ratio in the entire series.

More than 20 per cent of the children in this series were referred because of failure at school. The majority of these children began

to experience difficulty in their school work between the 9th and 12th years. In other words, beginning with the fourth grade of school, these children found the school work increasingly difficult. These findings would indicate that the belief of psychologists and educators that an intelligence quotient of 80 to 89 is sufficient for a child to do satisfactory work in the grade school, is not in accord with the facts.

Another significant fact brought out by this study is that very often these children receive a very creditable and, occasionally, even a superior rating on the psychological group tests. This tends still further to cloud the issue. Unless the child is given an individual psychological examination his true intellectual status will not be known and serious maladjustments may result.

Only 22 children were referred because they appeared to be mentally dull. This bears out the statement made above that the majority of these children do not appear mentally retarded and hence as much is expected of them as of children with normal intelligence.

Fifty-one children were referred for study because of physical, nervous or mental abnormalities. An interesting finding in this connection was the fact that of this number 21 were boys and 30 were girls. This ratio of boys to girls is exactly the reverse of the ratio in the other group of this series, and in the entire series. It corroborates what the author stated in a previous article, namely, that the greater nervous and mental instability of women as compared to men is already manifest in childhood.

A positive causal relationship between the conduct disorder and the subnormal intelligence was found in 40 cases. In other words, in 18 per cent of the cases, the intellectual subnormality was directly responsible for the behavior difficulty presented by the child.

In 97 cases, other factors in addition to the intellectual deficiency were responsible for the problems and in 88 cases, the intellectual status played but a very minor rôle, if any, in the causation of the specific problems presented by the children.

The fact that in 18 per cent of the cases there was a positive causal relationship between the intellectual level and the behavior difficulty assumes greater significance when it is realized that this series of 225 cases was part of a larger series of 1000 cases of behavior disorders studied at the Child Guidance Home, in which

the incidence of deviations in intellectual level as direct causal factors in the production of conduct disorders, was only 8.3 per cent.

For this reason, even though the number of cases reported is not large, it is fair to say that it is of extreme importance to recognize the rôle that subnormal intelligence may play in the causation of incorrigibility, delinquency, criminality and many other forms of antisocial behavior.

The limitations of this group of children have not been sufficiently recognized. Their number constitutes a rather large percentage of the total of children presenting behavior disorders of various types. Greater attention to this group is therefore urged upon all those who concern themselves with the social, mental and emotional problems of children.

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DISCUSSION.

DR. EDWARD J. HUMPHREYS (Thiells, N. Y.).—It is necessary for us to be on our guard in speaking of mental defects as being direct causes of incorrigibility, delinquency, criminality, etc. That so-called mental defects are involved in etiological processes leading toward antisocial behavior is true, but usually they play an indirect part in the production of a more inefficient organism of lowered social adaptability that, in turn, fails to adjust to an environment constantly growing more exacting and formidable.

In reference to the percentage estimates of delinquency, it is interesting to recall that 20 to 40 per cent of the population of our penal and reformatory institutions is mentally deficient. (Murchison found that the I. Q. ratings of the keepers in certain institutions were lower than those of their prisoners.) The 10 to 15 per cent of juvenile delinquents that are feeble-minded, as mentioned by Pintner, are only those who have been caught, literally speaking. On the other hand, there are the defective individuals who have committed the same acts but have been too clever to have been caught.

Dr. Lurie has stated, "No one is surprised when it is discovered that the school truant is mentally defective." We may add, "Unfortunately, too few

of us are surprised to find the school itself defective in its adaptation to the mentally defective in the elimination of the need for truancy."

The statement was also made that "Neither are we shocked when examination of the sex delinquent girl reveals the fact that she is feeble-minded." We may again add, "Neither are we particularly shocked at the one who takes advantage of the sex delinquent girl."

The object of this paper was stated as being: "The determination of the nature of the problem presented by the children who rated subnormal intellectually, that is, whose intelligence quotients ranged between 80 and 89." Some investigators, as indicated, are inclined to think of the individuals falling within this range as being dull average rather than defective. These individuals of 80 to 89 I. Q. very often seem to be physiological rather than pathological variants and should be classified, therefore, more in the average groups. However, the study of these children helps to emphasize that there is no sharp boundary between the lower groups of average children and the higher groups of so-called defectives.

The determination of the problems of the children studied related partly to what the community complained of—that is, delinquency, truancy, etc., and partly to personal deficiencies, such as physical distortions. Although it was not within the scope of the paper, an investigation of the nature of the problems of the subnormal would more properly include the interaction of the inner dynamics of the individual with those of the social and economic environment producing the types of responses called "Reasons for referral."

The second object of this study was concerned with "The correlations, if any, between their behavior difficulties and the subnormal intelligence." This immediately raises the question, "What is intelligence and in just what way does it influence behavior?"

Psychometric test results have tended to focus attention upon ratings rather than upon the organism. Intelligence has been identified too often with a rather superficial layer of consciousness and characterized in the terms of "two and two make—what?" and the ability to sing "My Country, 'Tis of Thee." In our zeal for the study of affect and emotion, we have left out the study of intelligence to a great extent. We cannot afford to leave out either emotion or intelligence if we ever hope to see the organism as a whole.

For our present purpose, it is possible to conceive of intelligence as the product of biological processes and symbol-dynamics which determine the adaptive efficiency of the organism. Changes in the usual relationships of these biological processes and symbol-dynamics, either inwardly or outwardly toward the environment, result on the one hand, in the symptoms of subnormal intelligence, or, on the other, the creativeness of superior intelligence. In the evaluation of the correlations between conduct and intelligence, it is necessary to delve deeply into these functions of the whole organism. Intelligence is not merely a shell of varying lustre but includes fundamental energies of the organism itself. It may be helpful also to recall that Lewin, in contrasting defective with non-defective children, laid emphasis on the existence of a two-headed monster always lying in the path of defectives—namely, the inferior performance of a more difficult task.

The behavior of defectives is based upon the degree of anatomical unity and physiological integrity, the extent of affective and emotional experiences, certain lack of cultural and educational influences, and is directly modified by the degree of high or low gradedness—that is, the degree of adaptive efficiency.

The anatomical unity of the low grades is markedly disturbed in the sensory, motor and associational structures. Dysplastic and hypoplastic structures are abundant. Low grade defectives may be considered as marked pathological or marked sublethal variants. The anatomical unity of high grades is adequate for practical performance but is theoretically hypoplastic and dysplastic. There is a tendency toward the production of physiological variants, sublethal tendencies being more hidden and familial types more abundant.

The physiological integrity of low grades exhibits marked incoordination of the sensory and motor fields, arising largely out of the disturbances from genetic, regulative, and toxic influences. The physiological integrity of the high grades permits in many instances, skillful performance. Intellectual dulling may be seen in perception, language, and imagination. Again, physiological variants are found more frequently in the highest groups.

Let us remember, that in our desire to analyze our patients, we face the danger of which Professor Bohr has warned us, that we "Cannot completely analyze life without destroying life." Our task, therefore, will perhaps remain uncompleted. The problems that Dr. Lurie has presented have thus led us to one of the most difficult problems of life itself.

DR. JAMES S. PLANT (Newark, N. J.).—It is very difficult to refrain from comparing this paper with Dr. Humphreys' contribution which we have just previously heard. It seems to me that Dr. Lurie has not recognized adequately the institutional components of the problem involved.

An example. The psychologist is entirely correct in claiming that the dull normal child can go through the grade schools. What the psychologist means, however, is that the eighth grade is the limit of this child's progress at the time that he is sixteen. These children start out in school with the others and are usually (in our experience) eleven or twelve years of age before the differences between what they can do and what they should do become marked. This age of incidence of trouble in school co-incides nicely with what Dr. Lurie has brought out as to the age of incidence of delinquency. The matter is further complicated by the fact that a great many children, particularly if they are rather quiet, polite individuals who wash behind their ears and say "thank you" in return for favors, tend to "drift" in the school without any very adequate check-up on their ability. These dull normals could be picked out in the first or second grade but the school does not do this sort of thing unless the child is a troublesome individual. Actually this particular problem usually presents itself to us when the crisis of a change to a junior high school or of leaving the neighborhood school suddenly throws the matter into relief—a problem which obviously has existed since the child was six.

I use this illustration to show that we must rise to Dr. Humphreys' challenge that we go into the social institutions themselves. As long as we just magnificently study the individuals who at twelve or thirteen come to us as mal-adjusted we are really nothing but glorified street sweepers—forever sweeping up the debris of life. It is only when we go into the school systems to show them that their rigid classification must produce these problems, that we are really meeting our responsibilities. Is not it grotesque, for instance, that with the exception of one school system in this country, children who have reading difficulties are given books that have content-difficulty on the same level as reading-difficulty? A thirteen-year old boy who can read on a ten-year level needs to have thirteen-year old content in a book that is written with ten-year old difficulty. Here again I just illustrate the sort of thing which we must press upon the school as true prevention of mal-adjustments and delinquencies.

We are learning pretty rapidly about the problems which children have in school—and the loads which they have to carry there. I would like very much to join Dr. Meyer in following Dr. Humphreys in the challenge that we must go to the institutions themselves. My own paper at this meeting attempted to indicate that we must equally become conscious of what is happening in industry. I suspect that similarly we will not meet our problems until we are more sensitive to what is happening in the church, in the family, in the field of recreation, etc. This is not really a problem of the dull normals—after all, as Dr. Meyer says, we are all defective. It is rather a problem of the pressures which are put upon these dull normals. Our responsibility leads out to doing more and more with these pressures rather than just sitting in our offices and waiting for the natural result of their action upon human beings to bring us this endless group of patients.

DR. OSCAR J. RAEDER (Boston, Mass.).—Dr. Lurie has done well, I think, in calling attention to this most difficult group, a group that is too smart for the feeble-minded school and not quite smart enough for other schools. We have really no place to put them.

Dr. Plant mentioned also this group in between the two classes in which the teacher is interested which drifts along until some crisis occurs, by which this individual is thrown out of adjustment. In the work at the clinic of The Boston Psychopathic Hospital I encounter this problem almost daily, and it is most difficult to know what to do with these people. I think anyone who worked in the Veterans Bureau or had anything to do with returned soldiers will remember what a large group of individuals there were who were more or less stationary after we were able to cure them of those milder types of psychoneuroses which we found in those men who had to be rehabilitated. It seemed that this class of returned soldier had become unadjusted and was just unable to get back, to get readjusted again. It is this same type that drifts along until some crisis throws him out of adjustment and then he is lost. This is a concrete example which shows the relative inflexibility of the mechanism of adjustment in this borderline type and in certain mildly psychopathic individuals.

FOLIE À DEUX.

INDUCED PSYCHOSES WITH REPORT OF A CASE.

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Since Lasègue and Falret in 1877 described this condition commonly known today as induced or communicated psychosis, several cases have been reported yearly. Nevertheless such cases still occur so that further reports seem advisable. The two cases herein reported are especially interesting because, aside from the usual transference of systematized delusions, the induced also suffered from hallucinations in the auditory and visual spheres, once such phenomena were suggested by the inducer. Boyd defined "folie à deux" as a mental disorder occurring in two or more predisposed individuals who have been intimately associated with each other, the predominating feature being delusions, particularly of a paranoid type, which are transferred from one individual to another.

The majority of cases of folie à deux cited in previous reports appear to be in members of the same family. Cases, such as this one, where transference of ideas occurs between husband and wife, appear infrequently. As in most cases in the literature in our two patients the dominant personality rested in the primary case (husband), and the abnormally submissive personality in the induced (wife).

The two patients admitted to this hospital resemble in many ways those reported by Pike and Chamberlain in 1933, in that while their memories remained intact and there was no clouding of the consciousness, marked perception disorders were present as demonstrated by both auditory and visual hallucinations.

It is difficult to conjecture how long the husband in this case was psychotic before the wife developed the same delusions. From all that could be gathered it seems that she was susceptible very early in their relationship, that she was highly suggestible to his ideas. It was probably only a matter of weeks before the suggestions presented to her became definitely fixed ideas.

REPORT OF CASES.

A. G., a white male, aged 51, entered the Milwaukee County Hospital for Mental Diseases on a writ of temporary detention January 24, 1936. Due to the fact that the patient had no relatives in this country, it was necessary to gather the social history from a few friends and from the patient himself.

A. G. entered this country in 1923 and became naturalized. He is a building contractor by trade. His education, all European, consisted of six years in the public schools, three semesters in a technical school and some training in a military engineering school. He had been able to make a modest living at the building trade both in Austria and in this country until three years ago when he was forced to resort to the charities for aid.

At the age of 31 he married a woman who had had two illegitimate children by another man with whom she had been living for several years in a common law relationship. It is also alleged that A. G. is the father of two children born out of wedlock. No children were born of this marriage.

A. G.'s physical health has always been good. He has numerous friends who speak highly of his integrity and general sociability. The patient displayed sound native intelligence and spoke English intelligibly.

His present difficulty dates back to 1929. He had devised several inventions some of which were patented. At the same time he began to suspect that attempts were being made to gain access to his possessions. He believed that people were entering his home in his absence. In order to overcome this intrusion he devised methods of barricading windows and doors, and of leaving sundry telltale detection devices scattered about the house. Despite these precautions, however, he was convinced that his belongings were being ransacked during his absences.

As time went on he felt that his enemies were becoming bolder, and he began to take weapons to bed with him. At one time he was so certain that there was an intruder in his yard that he fired a shotgun into the air to frighten the enemy, and as a consequence of this action he came to the notice of the police. The patient then began to suspect that automobiles cruising in the neighborhood were spying on him, and he jotted down a long list of license numbers. He then began to feel that he was being followed on the street, that people motioned towards him, and that utter strangers were talking about him. He believed he was accused of being a great international criminal. More than once he applied for assistance from the police department; and since they refused to aid him, he soon developed the delusion that they were associated with his persecutors. When policemen passed him on the street, he felt that they made disparaging statements about him. He noted down descriptions of persons who appeared suspicious to him, and he heard various phrases such as "he is a criminal," "the jail is too good for him," etc. As the number of his persecutors increased and as the methods they used became more bold and harassing, the more

was he convinced that his inventions were worth millions and that a large concerted action involving the police, city government officials and even federal officials, was in force to subdue him and finally, as he describes, grind him in the earth. The patient went so far as to send a verbose and lengthy document to the League of Nations in which he accused every agency of government from the President down to the local police of being conspirators to defraud him. Shortly after this writing he was apprehended and held for mental observation, subsequent to which he was brought to this hospital.

Here in the hospital the patient was polite and tractable. He did not fear for a moment that he would be found insane. He held an exalted opinion of his abilities and his versatility. He claimed that he was not only an inventor but also his own lawyer, and therefore needed no one's assistance in his defense. As a rule he was mild-mannered, gentlemanly and exceedingly polite. However, upon interrogation he would become excited; his voice would work up to a crescendo; he would stamp his feet and pound his fists upon the table. He refused to believe with unerring certainty that any of the alleged occurrences were projections of his own thoughts. As far as he was concerned he had proof for everything.

The patient's memory was good. He was clearly oriented and able to carry on a lucid and coherent conversation. He did not seem suspicious of nor hostile toward anyone in the hospital and seemed rather to feel friendliness toward the personnel and medical staff. He was reserved and cautious of the statements he made until prodded to anger, when his natural barriers of reticence and calmness were let down and he would pour out scathing invectives on his enemies and denunciations of his oppressors.

During his stay in the hospital the patient A. G. was given opportunity to have many visits with his wife who was a patient here at the same time, and during these visits he would caution her not to say too much and to refer any interrogations to him. A diagnosis of paranoid condition was rendered by the medical staff.

At the time of his parole from this institution on May 13, 1936, the patient had not greatly changed. He seemed somewhat milder regarding his entire delusional trend; but knowing the patient, it seemed that he left this impression deliberately, feeling that it was expedient towards gaining his parole. As a matter of fact he reflected that it would be best to drop the whole matter, to forget about it, as he wanted to start life anew.

J. G., a white woman, aged 44, married, Catholic, entered the Milwaukee County Hospital for Mental Diseases on January 30, 1936. Her husband, A. G., was entered in this same hospital six days previous to her admission. As in his case, much of her social history was gathered from herself and a brother. There was no history of mental illness in her family. Her parents were separated.

The patient was born in Austria and came to this country with her husband in 1923. She had had a primary school education in Europe and

some night school in this country. The patient had given birth to two illegitimate children in Europe and had lived as common law wife with their father for several years. Her early history appears essentially negative except for the fact that she was regarded by friends as being somewhat suspicious and rather seclusive. Her physical health, like her husband's, had always been good.

It appears that her psychotic manifestations developed within a short period following the appearance of these phenomena in her husband. She herself admits emphatically that she had no suspicion nor entertained any ideas of persecution until her husband warned her of their danger and until he called her attention to the various methods being used by the conspirators. It was not long before J. G. began assisting her husband in checking up these various phenomena. She concurred with his every delusion. She vowed that she saw or heard every move that was troublesome to her husband. Later when her husband began to entertain ideas of reference from people upon the street, she also developed these. She went so far as to admit that people made remarks of a degrading sexual nature about her, but she noticed this only after her husband had called attention to such occurrences.

Here in the hospital the patient J. G., like her husband, was a mild individual, polite and cooperative. She remained reticent in talking of herself and more than once asked if her husband could not be present so that she could be guided in her statements. A diagnosis of paranoid condition was rendered by the staff. The patient, like her husband, did not change appreciably during her stay in the institution. She, too, felt unshakably convinced that she would not be kept indefinitely, and that the doctors would not find her insane. She was extremely cooperative. Her conduct was exemplary and she was permitted freedom on the grounds. She was paroled with her husband on May 13, 1936, as improved.

In our study of these patients, the question naturally arose whether we were dealing with true mental aberrations, whether it was a case of extreme impressionability, or whether each of the two was mutually influential and responsible for the psychoses. The conclusions finally, and I believe correctly drawn, were that the psychosis was produced by the husband and communicated to the highly suggestible, loyal and not too intelligent wife.

It is unfortunate that the influence of heredity in either of our cases could not be determined, because of the lack of reliable information. It is emphasized in the literature that neuropathic heredity, identical environmental factors, and close relationships of the individuals are the chief etiological factors in these psychoses.

Some writers classify also under folie à deux, cases in which psychoses occur simultaneously, and among these are many which

are not of the paranoid type, but represent other psychoses such as mania, dementia *præcox* and melancholia. In this hospital we have had two cases of dementia *præcox* appearing simultaneously in two brothers, and on another occasion three cases of dementia *præcox* in two brothers and one sister. As Rhein suggests, most cases of induced psychoses are of a paranoid type. This is probably true because the paranoiac is extremely plausible and persuasive, especially to one of inferior intellect.

It is known that in some instances a cure has been effected in the induced by separation of the pair; however, study of our cases was halted by their parole from the hospital.

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A STUDY OF CASES OF FOLIE À DEUX.*

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Special interest has always attached to cases of folie à deux because of the light which they throw upon the problem of environment and heredity, as well as upon the way in which false ideas may be developed.

One definition refers to folie à deux as "a broad term which has been applied to the occurrence of mental disturbances in two or more individuals who have been intimately associated with each other." The literature would lead one to believe that there is, as a rule, a similarity in the manifestations of the disorder in the two persons concerned or the acceptance by one of the ideas held by the other. Four forms have been described, namely:

1. Folie imposée, in which an inferior or submissive individual is brought into intimate contact with a mentally ill person of a more positive make-up, and accepts the false ideas of the latter. Such ideas are usually persecutory in type. It has been said that if they are separated, the weaker individual tends to drop the beliefs of the stronger personality.

2. Folie simultane, which is characterized usually by depression or delusions of persecution which appear simultaneously in two morbidly predisposed individuals.

3. Folie communiquée, in which the second individual accepts the ideas of the first after prolonged resistance and the psychosis persists even after they have been separated.

4. Folie induite. This type consists of the addition of new delusions to a psychosis as a result of association with other patients.

It is not my purpose to discuss the types mentioned, and it may be added that some writers believe that the division of folie à deux into different forms is unnecessary and confusing.

* Read at the ninety-second annual meeting of The American Psychiatric Association, St. Louis, Mo., May 4-8, 1936.

REPORT OF CASES.

CASES 1 AND 2.—E. S. and H. S. Two sisters who present an identical psychosis. Little information has been obtained concerning their early life except that they were always said to have been peculiar. There is a difference of about 10 years in their ages, the older being about 50 years of age. Not much is known concerning their conduct before admission to a state hospital except that the janitress in the house in which they lived said she had known them six years; that they never visited with other tenants in the house and scarcely answered their greetings of the day. They dressed in a very fantastic manner and at times talked about their imaginary ideas. They were admitted to a state hospital in 1923 and were found to have a very bizarre trend of thought to which they have constantly adhered during their hospital residence since that time. They believed they were made by a machine which they referred to sometimes as "it" and sometimes as "he." Each one said that neither she nor her sister were ever born, but that both had lived for thousands of years. They felt very sure that all their activities were controlled by this machine and that they would never die. Their only explanation for admission to the hospital was that they lost contact with the machine for some reason which was unknown to them, but when they re-established contact with it their difficulties would be solved.

During all these years they have both clung very tenaciously to the ideas above expressed. When any attempt was made to obtain any information from them concerning their past life, they invariably reverted to their ideas about the machine as given above. They spent a large part of their time doing art work in the occupational therapy class and when not thus engaged sat together conversing in a very low tone of voice, always making sure that no one around them heard what they said. When interviewed together, the older sister took the lead in the conversation, the younger quickly agreeing to her statements. When interviewed separately, they expressed the same trends.

These patients were separated in the institution at times, but were so much depressed by separation and the one seemed to depend to such a great extent on the other that separation was not continued. During the periods that they were apart, there was no change in either as regards the false beliefs which they held. The older, more dominant, sister died about a year ago. Since that time there has been no change whatsoever in the younger sister. She sticks very tenaciously to the ideas she expressed when they were together. She insists the sister is not dead but that she has gone away.

It is interesting to note that the dominant sister was more masculine in her physical development than the other. Her pelvis was narrower and she had a much lower pitched voice. In fact if one did not see her one could well imagine her voice to be that of a man.

These cases were both definitely of the schizophrenic type. The firmness with which each held her delusional ideas after separation indicates that there was something more than a mere acceptance of

false beliefs but the association, in some way, definitely precipitated a schizophrenic psychosis in at least one of the patients.

CASES 3 AND 4.—Two sisters C. R. and E. R., ages 50 and 55. They have been together practically all their lives, there being only short periods in which they were separated. In these patients there was a very strong hereditary background for mental disease. There was a history that the mother had a mental breakdown on two occasions and an older sister is now in a mental institution. In these cases there was considerable difference in their personality make-up. The elder sister was a very sensitive stubborn person, making few friends and living within herself. At no time was she a good mixer. The younger more dominant sister, though very sensitive and easily offended, was a well-liked girl, good mixer, is said to have had many friends and admirers, was happy, cheerful and optimistic. There has always been a very strong attachment between these two sisters. The one has depended very largely on the other and they are much grieved when separated. Both had good educational opportunities but were not of the studious type and neither secured a good education. The younger sister was admitted to a sanitarium in 1919 where she remained about six weeks and made a temporary improvement. The physician in charge of the sanitarium said that at the time of the younger sister's residence in the institution he saw the older sister who was also definitely abnormal and under the influence of the younger's delusional trend; that she was the weaker of the two and of a much more submissive personality make-up. He further says: "I am not surprised that they are both in an institution, a typical example of insanity in two." These patients did not get along well with their relatives and soon after the death of the mother brought suit against the executors of the estate. During the litigation it was discovered that they were definitely abnormal with paranoid trends. They both developed paranoid ideas against the judge and also against several attorneys whom they secured to take charge of the litigation. They became very annoying to the judge and called him frequently on the telephone and went frequently to his office. Not much is known concerning them after this litigation until they came to New York City in the fall of 1929 where their conduct at the hotel was considered devilish. They complained to the manager that they feared someone was trying to harm them. They were, at times, heard to make peculiar moans and groans in their room.

On admission to the hospital they talked about their troubles in the courts for the past 10 years and that a certain lawyer in Louisville, Kentucky, had taken advantage of them and was trying to steal their money. They thought the physicians were their enemies and were constantly harping about persecution they received at the hands of lawyers in Louisville and also the judge. At times both of them have expressed ideas concerning interference with their minds. One sister said that the judge hypnotized her and kissed her while under his influence. They remained very suspicious and very guarded in their statements.

Observers of cases of folie à deux have expressed the opinion that a younger person is more likely to accept the delusions of the older one than for the reverse to occur. However, in the above cases it is evident that the older sister was dominated by the younger and took up the delusional ideas of the younger sister.

CASES 5 AND 6.—Two sisters, N. B. and E. L. Not much is known concerning their family history or early personal history. There is a difference in their ages of two years, the younger being 65 and the older 67. They came to this country from Ireland 46 years ago and apparently have rarely been separated since that time. The younger sister was married about 30 years ago and lived with her husband for a number of years, but the older sister to whom she is very much attached lived with her during that period. The younger sister is the more dominant one and is apparently the one who has transmitted her psychotic trends to the older sister. The first information we have concerning them is that they were sent to the magistrate's court for non-payment of rent. They were said to be well known in the Municipal Lodging House and had attacked a physician there.

On admission the younger sister expressed numerous delusions of persecution and auditory hallucinations which had apparently controlled her behavior for the last 15 years. She said there was a conspiracy to kill her and everyone knew it. Everywhere she went they watched and spied on her. She said this had been going on for 15 years. She admitted hearing voices and said they sounded like angel voices. She expressed other persecutory ideas and ideas of a religious character which were fantastic and absurd. The older sister, who was the less dominant one, expressed many persecutory ideas which, while not exactly the same, were very similar to those of the younger, more dominant, sister. The impression the physician received who examined her on admission to a state hospital was that her ideas originated with the other sister whose delusions of persecution she very largely accepted. These patients spent much time together. The younger sister was more aggressive and domineering. While interviewed separately, the older sister did not express as many absurd ideas as the other. However, when they were together, the older sister acquiesed in what the younger said and agreed with everything.

As in the other cases, the younger sister was the more dominant one and is apparently the one who transmitted her psychotic trends to the older sister.

CASES 7, 8 AND 9.—M. MK.-R. M. MK. and M. MK. In these cases we have a mother and two daughters who came to the hospital at the same time. The mother's age is 70, the elder daughter 29 and the younger 26. Little is known concerning the family history. The mother has been a widow for seven years and during that time the daughters have lived with her. The mother has always held aloof from others. When the daughters were children, she refused to allow them to play with other children and as they grew up she kept them

very close to home. The mother apparently exercised a strong influence over them, was in constant touch with them and did not want them out of her sight. The daughters were never interested in the opposite sex and made no social contacts.

All three developed the idea that the mother's brother did not interest himself in them because of the influence of his wife. Later they developed the idea that her brother's wife was bothering them because she was jealous of them. They thought that she would ring the bell of their apartment and would look through the keyhole and was often around their home. They finally had the wife of the mother's brother arrested, but the judge gave them a lecture and threw the case out of court. The morning before they were sent to the hospital, they got up at 3 o'clock, saying the house had been electrified and that someone was going to kill them. All three shared this belief. The younger daughter expressed the most active trends and hallucinations which were later taken up by the mother and sister. This same sister began to say that she could hear Rudy Vallee, Mary Pickford and other movie stars performing over some kind of machine, either radio or dictaphone. The next day the other daughter began to say she could hear the same voices quite distinctly. The mother accepted the belief and when interviewed says "Of course I believe it. There is no doubt about it." She admitted that on one or two occasions she heard a voice through a machine but was unable to tell just what it said. The mother and elder daughter say they have not actually heard voices since coming to the hospital but the other daughter continues to hear them. They both believe that they heard voices before coming here and can see nothing absurd in the fact that the voices came through the air over some invisible machine.

We have in these cases, a mother and two daughters who have lived together intimately, having excluded practically all outside interests. Psychotic ideas developed at practically the same time. The younger daughter was a little more actively psychotic but her delusional ideas and hallucinations were at once taken up by the mother and sister. It would seem that these cases are all of the schizophrenic type and while the mother is 70 years of age, she has apparently always been of a fundamentally defective personality, having been shy, seclusive and suspicious.

Two cases of induced psychosis in monozygotic twins have come under my observation. Monozygotic or homologous twins, as is well known, are very much alike in appearance and manner and this similarity is very slightly changed by different environment or by age. The criteria of identity are same sex, close similarity of features, physical measurements, body build, hair color, texture and distribution, color of eyes, skin color, texture and pigmentation,

shape and size of ears, shape and irregularities of teeth. Physical characteristics may, of course, be modified by acquired disease or mal-nutrition. They are as nearly alike as the two sides of the body of an individual. They show parallelism in ability in school, temperament and mental reactions; also in posture, gait, voice and behavior. The *Journal of Heredity* a few years ago undertook an investigation of the retention of these similar traits which showed how little differences in environment had affected the original endowments. An example of special interest was found in a pair of orphan twins, separation of whom had occurred at the age of eight months, their rearing following in divergent parts of the United States. Their similarities were not changed by the separation. Until recently very little has been written on the subject of psychosis in twins and what was written, as a rule, failed to show whether they were of the monozygotic or dizygotic type. Parker, director of the Harvard University zoological laboratories, reported a case of schizophrenia beginning in monozygotic twins at 20 years of age. He reported a second instance in which one twin became affected at 16 and the other at 19. They were sent to different hospitals and after 33 years they were both in the same condition and it was noted that not only was their appearance sufficiently similar for them to be mistaken for each other but their mannerisms were also very much alike. His conclusion is that schizophrenia is germinal in origin.

Rosanoff¹ appreciating that a large amount of material for statistical purposes was necessary, collected 142 pairs of twins in one or both of whom schizophrenia was present. His principal finding was marked contrast between the monozygotic and dizygotic twins with respect to the proportion of both of the pair affected. These proportions were respectively 68.3 and 14.9 per cent.

CASES 10 AND 11.—Two brothers, L. B. and L. B. There was no family history of mental disease. They presented the relationship which monozygotic twins usually show. Their personalities were very much alike. In fact they were as nearly identical in every way as it is possible for two human beings to be. At no time in their life have they been separated for more than six months. Both were retiring and inclined not to mingle with others. Neither cared much for the opposite sex although one married at the age of 27. The other continued to live with him as one of the family. The single brother showed evidence of a psychosis first. He escorted a married woman home from a dance one night and developed the idea

that her husband would kill her and said she had told him that her husband said he would kill her if he ever found her out with a man wearing a white shirt. He said she had told him to wear a white shirt just to find out whether her husband meant what he said. He became restless, unable to sleep and talked much about this woman and the white shirt. He said she was nagging him inside. He continued very restless and the subject of his conversation was the woman spoken of above.

On admission to the hospital on December 16, 1933, he admitted auditory hallucinations. He gradually improved and on August 19, 1934, was allowed to go home.

About a week after the admission of the single brother, the married brother began to show a mental change. He said his brother was going to be married to the woman whom he had been talking about. He expressed many queer ideas. He said he could read his fortune and the fortune of his brother in tea leaves and could tell by these tea leaves when his brother could get out of the hospital. He also thought his wife was trying to poison him. He was admitted to the hospital January 13, 1934, less than one month after the admission of his brother. He was restless, prayed a great deal and cried frequently. He would, at times, vomit after meals and thought his food had been poisoned. He thought other patients were talking about him. He frequently wrote letters to people whose pictures he saw in newspapers. He thought his brother, who was also in the hospital, was in love with his wife and said he was willing to let his brother take his wife so that he in turn could marry the lady that his brother took home from the dance and about whom he had talked so much before admission. He heard voices which he said were the voices of his wife and dead step-daughter. He gradually improved and on April 8, 1935, was paroled to the custody of his wife.

We have in this case of monozygotic twins, a psychosis in which the onset was at practically the same time in both and which was very similar in character. At the time these patients were allowed to go home, their psychotic ideas had practically disappeared. I have seen them several times since their release and, so far as I can ascertain, they are entirely free from psychosis. Their personalities, however, seem the same as they have always been, both being retiring, not self-assertive, inclined to stay by themselves, having a very narrow range of interests.

CASES 12 AND 13.—Two brothers, F. D. and J. D. F. D admitted October 17, 1935; J. D. admitted March 28, 1936. No history of mental disease in the family. They are very much alike and present the characteristics that one finds in monozygotic twins. They were brought up by two old maid aunts who were exceedingly penurious. Because of stinginess, they made the boys dress in a peculiar manner. At times they

shape and size of ears, shape and irregularities of teeth. Physical characteristics may, of course, be modified by acquired disease or mal-nutrition. They are as nearly alike as the two sides of the body of an individual. They show parallelism in ability in school, temperament and mental reactions; also in posture, gait, voice and behavior. The *Journal of Heredity* a few years ago undertook an investigation of the retention of these similar traits which showed how little differences in environment had affected the original endowments. An example of special interest was found in a pair of orphan twins, separation of whom had occurred at the age of eight months, their rearing following in divergent parts of the United States. Their similarities were not changed by the separation. Until recently very little has been written on the subject of psychosis in twins and what was written, as a rule, failed to show whether they were of the monozygotic or dizygotic type. Parker, director of the Harvard University zoological laboratories, reported a case of schizophrenia beginning in monozygotic twins at 20 years of age. He reported a second instance in which one twin became affected at 16 and the other at 19. They were sent to different hospitals and after 33 years they were both in the same condition and it was noted that not only was their appearance sufficiently similar for them to be mistaken for each other but their mannerisms were also very much alike. His conclusion is that schizophrenia is germinal in origin.

Rosanoff¹ appreciating that a large amount of material for statistical purposes was necessary, collected 142 pairs of twins in one or both of whom schizophrenia was present. His principal finding was marked contrast between the monozygotic and dizygotic twins with respect to the proportion of both of the pair affected. These proportions were respectively 68.3 and 14.9 per cent.

CASES 10 AND 11.—Two brothers, L. B. and L. B. There was no family history of mental disease. They presented the relationship which monozygotic twins usually show. Their personalities were very much alike. In fact they were as nearly identical in every way as it is possible for two human beings to be. At no time in their life have they been separated for more than six months. Both were retiring and inclined not to mingle with others. Neither cared much for the opposite sex although one married at the age of 27. The other continued to live with him as one of the family. The single brother showed evidence of a psychosis first. He escorted a married woman home from a dance one night and developed the idea

that her husband would kill her and said she had told him that her husband said he would kill her if he ever found her out with a man wearing a white shirt. He said she had told him to wear a white shirt just to find out whether her husband meant what he said. He became restless, unable to sleep and talked much about this woman and the white shirt. He said she was nagging him inside. He continued very restless and the subject of his conversation was the woman spoken of above.

On admission to the hospital on December 16, 1933, he admitted auditory hallucinations. He gradually improved and on August 19, 1934, was allowed to go home.

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wore girls' shoes. They did not allow them to associate with other children and no mention was ever made of the opposite sex. During their early 'teens, they were taken away from the influence of these aunts and began to associate somewhat with other boys although they never had anything to do with the opposite sex. They looked upon the other boys in the neighborhood as "rough necks" and different from them. They had very few outside interests, their chief interest being in each other. Both were exceedingly sensitive and self-conscious. In 1933 they secured a job in a C.C.C. Camp and were thus thrown in close association with a large number of young men about their own age. Apparently this forced association with others constituted an intrusion upon the inner life which the boys had been living together for so long and was a marked upsetting factor. They were subjected to the usual banter which young men carry on and were the butt of many jokes. Sex matters were freely discussed by the other boys and they were told that unless a young man had sexual relations he could never develop properly and his life would be dwarfed. As neither had had sexual intercourse, this worried them very much. They developed the idea that the other boys in the camp were talking about them. After their return home from the camp, they developed the idea that the young men in the neighborhood were watching them, talking about them and saying they were degenerates. They discussed their psychotic ideas with each other very freely. They were both so disturbed by this thought that they considered taking it up with the police. This idea is still retained by both.

In this case it seems very likely that going to the C.C.C. Camp where the seclusion of these two boys was broken in upon, was a factor in the development of the psychosis. They had lived together within a little world of their own thoughts, had excluded outside interests and had depended upon each other. When intimate association with others was forced upon them, the ground-work for the development of a psychosis was laid. This, to my mind, emphasizes the importance of certain situations in the precipitation of a psychosis in individuals who are fundamentally of the schizophrenic type. The implication for mental hygiene is here very great. There seems little doubt in these cases that each influenced the other in arriving at his delusional ideas.

DISCUSSION.

A study of the personality of the cases in this series will show a tendency to introversion and the exclusion of outside interests. In fact the interests of these patients were generally so narrowed down that they were little concerned about anything except each

other. There was usually also an evident emotional immaturity. All were relatives who had lived together over a long period of time, sharing the same family life and the same sentiments. The psychosis was sometimes sudden, sometimes insidious in onset but the symptoms were usually reached at about the same time. One of the pair did not always show a strong dominance over the other such as has been emphasized by other writers. In fact it was sometimes difficult to tell which had influenced the other most in arriving at the false beliefs. There was, however, always an intimate intertwining of the personalities, a strong affective relationship having been built up prior to the development of the symptoms. That the reciprocal association was in some way responsible for the development of the psychosis and that it would not have occurred, at least in one of the associates had there not been this intimate relationship, there seems little room for doubt. Homosexual attachment seemed to influence this intimate merging of the personalities in some of the cases.

Can any information be obtained as to the etiology of schizophrenia from this series? What conclusions can be drawn when one of two brothers, monozygotic twins, between whom there is an intimate association, develops the idea that people are watching him and talking about him, calling him a degenerate, and the other takes up the same idea concerning himself; or when in the cases of two sisters who were intimately associated, one begins to hear strange voices through a kind of machine and soon the other sister begins to hear the same voices in the same manner? It would seem that the gap between a pre-psychotic state and a psychosis is at times, very narrow; that the psychotic "threshold," if we may use the expression, is in some cases very close. In these patients the power of suggestion in some way was responsible for the development of the psychosis of the schizophrenic type. We know that the influence of suggestion on mental reactions generally is exceedingly great, as evidenced by the manner in which the teachings of many cults are accepted, such as Christian Science in which the world is seen in the light of one's desires and the denial of the existence of things as they are is brought about. The ability of great orators and great teachers to practically change the lives of individuals over whom they exercise great influence, the widespread belief in spiritism and witchcraft are all evidences of the

importance of suggestion. It has been found that normal people who live together over a long period of time, such as husband and wife, are inclined to become like each other in their method of thinking and acting.

It has long been known that a psychosis may be precipitated by strong emotional situations. Cases have been reported recently in which psychoses which seem fairly typical of schizophrenia occurred as a result of strong emotional influences and a dominant personality. The cases here referred to were in those who attended the religious services of the negro preacher, Father Divine.² There was no evidence, however, of any strong emotional situations in any of the cases in our series.

There is some evidence that superstition is, at times, the foundation upon which schizophrenia may develop. A case has been reported by Gotten and Patten³ in which a woman, 33 years of age had paranoid delusions and hallucinations based upon spiritualistic ideas acquired through her experiences in spiritualism and from the teachings of her father.

What can be said as to the psychotic picture in cases of induced psychoses? Is it merely a plunge into unreality and the acceptance of false beliefs which are given up by one when the two are separated? Our cases do not bear this out. The psychoses seem as deeply set as in the usual cases of schizophrenia. The trends were, as a rule, very absurd and not within the realm of possibility but meet all the conditions of real delusions. The power of suggestion in some way touched something within the individual and he becomes deeply changed. The prognosis is essentially the same as the prognosis in schizophrenia generally. In two sisters in this series, separation by death has existed for over a year and the psychotic manifestation in the survivor remains as firmly fixed as when they were together.

Much has been said as to whether or not schizophrenia is an organic disease. I am not prepared to say whether organic changes account for the *type* of individual in whom this condition develops. That the psychotic picture, however, is not brought about by acute physical changes such as auto-intoxication or infections but is reached by psychological mechanisms, these cases seem to prove.

The fact that schizophrenia may be precipitated by suggestion leads us to think that the relationship of schizophrenia to hysteria

is closer than we have generally believed. The essential difference seems to be that the psychotic ideas are not given up as easily by suggestion in schizophrenia as in hysteria. This I believe is due to the inherent difference in personality in the two types of cases. The schizophrenic-like individual is so overwhelmed by his ideas that sublimation is markedly interfered with and as a result there is a splitting of the personality because the intellect refuses to accept the ideas and a state of tension is thus produced.

The fact that symptoms in schizophrenia can be brought about by suggestion leads us to wonder whether or not symptoms might be thus removed if the proper measures of suggestion were used. That a symptomatic improvement, in some cases, can be brought about by simple measures such as removal of patients to a different ward, engagement in interesting occupations, development through physical culture and occupational therapy, and recovery from physical illness, is the experience of all who have treated large numbers of patients in state hospitals.

Experiment as to whether or not trends which are produced by association with a psychotic individual could be removed by intimate association with a normal person who has strong suggestive power, would be of great interest. Storchheim⁴ found that one patient whose personality agreed with another could, by close association, influence the other favorably from a psychotherapeutic standpoint.

The patients in this series were all of the schizophrenic type. We find in state hospitals that the classification of patients in this group is at times a very difficult one, especially from our descriptive outlook which is so largely used in making a so-called "diagnosis." The range of clinical patterns considered as belonging to this group is very wide. The older classification included a group which was called "allied" to dementia praecox. The essential difference between this group and the frank group seemed to be one of instinctive tendency to react in a given way. If this tendency was not too defective, the symptomatic picture showed little of what we thought of as dementia praecox and these cases were called "allied" forms.

The fact that a schizophrenic psychosis can be produced by suggestion in a certain *type* of individual leaves us with the fact that fundamentally the individual remains schizophrenic-like even if the symptoms are greatly improved or removed altogether. In

hysteria, which symptomatically at least, resembles schizophrenia, the *attack* can be removed by suggestion. However, the same as in schizophrenia, the dynamic forces of the personality and the individual's suggestibility are still retained. There is thus, we believe, a wide difference between the improvement of the symptoms of a psychosis which has developed in the schizophrenic-like individual and changing essentially the type of individual in whom the psychosis is found. The trends and hallucinations are only symptomatic and to treat the trends and hallucinations is somewhat like treating the symptoms in physical disease.

The question arises as to what can be done to change the instinctive inherent tendencies of the individual. It seems probable that something can be done in young people by the way of education, development of good habits and the correction of bad ones and the improvement of the environment. The fact that the psychosis occurs in individuals who have a narrow range of interests would lead us to believe that the establishment of interests might, in some way, help to change the dynamic forces of the personality so that the patient would improve fundamentally as well as symptomatically. As is well known, the acquisition of varied and permanent interests is good mental hygiene. Nothing more surely means an approach to mental illness than vagueness of thinking and a lack of interest. The importance of the development of interests is emphasized by the benefits resulting from occupational therapy which really means the turning of the mind from preoccupation with conflicts to definite concrete interests. How much can be done by psychoanalysis to overcome the tendency to react in a given way I am not prepared to say. To quote a well known psychoanalyst, "there can be no psychological recovery from an impulsive conflict except by developing the patient's psyche to a unification at an evolutionary level above that on which the conflict arose. This evolutionary development means the maturing of the desires and mental processes. It is from this viewpoint of dealing only with intellectual processes that we must define psychoanalysis as a more scientific procedure than naked suggestion." What can be done to improve fundamentally the type of individual in whom schizophrenia occurs is, I believe, the real challenge to psychoanalysis.

It is of interest that there are two pairs of identical twins in this series. Widespread interest has been aroused recently in the

subject of psychosis in twins. According to the best available statistics, those of Rosanoff, in 68.3 per cent of cases of monozygotic twins where one has schizophrenia the other also has this disease. This large percentage in which both of monozygotic twins are affected can, it is believed, be accounted for to some extent by the fact that the genetic relationship in monozygotic twins is closer than that of either dizygotic twins or siblings. The genetic relationship, however, between dizygotic twins is no closer than that existing between siblings and yet it has been found that in 14.9 per cent of dizygotic twins where one has schizophrenia, the other is also affected with this condition, whereas the corresponding figure among siblings, as shown in a recent study by Humm, is about 3.1 per cent. It is evident that the excess in the incidence of psychosis in dizygotic twins over siblings is due to factors other than genetic relationship. As is well known, twins are inclined to be much together and their interest in each other is unusually strong. These are the conditions under which the power of suggestion operates to bring about an induced psychosis. This, I believe to be the explanation for the much larger percentage in which both dizygotic twins are affected than in the case of siblings. The fact that monozygotic twins are of the same sex and of closer genetic relationship would lead to a larger number of this type of twins forming very intimate associations and this I believe accounts, to a large extent, for the large percentage in which both are affected. Further study of the occurrence of psychosis in twins who were separated at an early date, in both the monozygotic and dizygotic type, should throw much light on the subject of folie à deux and indicate whether or not the power of suggestion is stronger in the etiology of schizophrenia than we have believed.

CONCLUSIONS.

1. A psychosis of the schizophrenic type may be precipitated by suggestion and in some cases symptoms may be improved by simple measures. It would thus seem that there is a close relationship between schizophrenia and hysteria.
2. In these cases which were produced by suggestion, personality defects such as introversion and a narrow range of interests were evident.

3. A schizophrenic psychosis produced by suggestion does not differ in symptoms or prognosis from the same psychosis reached in the usual way.

4. Whatever may be said as to organic changes in producing the type of individual in which schizophrenia occurs, these cases would indicate that the psychoses were precipitated by psychological mechanisms.

5. In all cases in the series the psychosis was reached at about the same time. There was not a period of resistance on the part of one in accepting the ideas of the other.

6. The large number of cases of psychosis in twins it is believed is due to a large extent to intimate association and in many cases there is really an induced psychosis.

7. One of the pair did not always show a strong dominance over the other such as has been spoken of by other writers.

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DISCUSSION.

DR. J. B. SPRADLEY (N. J. State Hospital, Trenton).—Dr. Grover is to be congratulated upon his series of patients, in bringing into clear focus several important questions immediately concerning folie à deux, but equally applicable to other diagnostic groups. Cases of folie à deux may be interesting from a statistical standpoint, because we see only a limited number, but they put emphasis on those etiological factors of environment, association and suggestion.

I have seen 29 cases in 1700 consecutive admissions. Of the 29 cases, there were thirteen pairs, one group of three, and in my opinion not all of these were cases of schizophrenia or paranoia. I saw two pairs, a man and his wife, and a brother and sister, who were definitely manics. They had a sudden onset of a manic psychoses, had identical reactions, delusions, etc. They recovered after six and eleven weeks, respectively.

I saw another pair of brothers, aged 67 and 69, who had been considered normal up until about six months before their admission.

My group of three consisted of a man and his wife, both of whom had been patients in a New York state hospital. They were released, and married. They merged their individual delusional system into a common trend, and a seventy-year old mother accepted those delusions.

Dr. Grover mentions several of his patients who were over seventy years of age. Possibly these were schizophrenics, but I feel cases of folie à deux are not necessarily schizophrenic.

This raises the question, then, of how similar these cases really are, except for the basic fact that one psychosis develops simultaneously with another. Perhaps more cases might show a trend running through this group which would enable us to differentiate it from others. Whether a sufficient number of cases of folie à deux can be collected for a study of similarities, is questionable.

The paper points out the fact that not all the etiological factors are known, and many are lost in the background of ignorance. In cases one and two, nothing was known of the early life. In cases three and four, there was nothing that would give a clear picture of the initial onset of the psychoses. Cases three and four came under observation in their seventh decade of life, and in seven, eight and nine, the anamnesis was not complete.

This shows us we need to develop a system by which psychiatrists, private physicians and informed people within the community can pool factually worthwhile information concerning the early developmental history of a psychotic. At one time we expected mental hygiene clinics to offer a place in which psychotics in the process of development might be studied, but unfortunately, the tendency in these clinics has been to disassociate their work from that of the hospital proper.

One of the most interesting problems that Dr. Grover raises is the relationship of schizophrenia and the characteristic of suggestibility. I think we all realize that schizophrenics, after they come to the hospital, are not very prone to accept the ideas of other psychotics, although they may be closely associated with them over a long period of time.

This may not apply to a period in the development of the psychoses, and Dr. Grover's paper indicates there is a period when suggestion is an all-important factor in determining the type of delusion which will later develop.

The thought that there is a similarity or relationship between schizophrenia and hysteria is interesting and new to me. I look for further work and comments on this line. My compliments to Dr. Grover for the excellent presentation of his subject.

DR. CHARLES W. CASTNER (Wichita Falls, Texas).—I am much impressed by Dr. Grover's study in which he makes particular reference to the occurrence of schizophrenia among his cases. I have also observed a number of identical twins, and in one instance triplets, young male patients whom we classified as acute manics and 11 of whom recovered. My own observations had not led me to think of the possibility of a close relationship between schizophrenia and hysteria such as has been referred to.

Studies such as the present one are certainly of value with the light they may throw upon etiology, particularly the constitutional and hereditary factors.

DR. A. A. BRILL (New York City).—In the first place I am very much amazed that the last speakers, Dr. Spradley and Dr. Castner, maintained that they did not know there was any relationship between schizophrenia and hysteria. All you have to do is read Kraepelin; he tells you plainly that there is a close relationship between the two maladies and that hysterical reactions are invariably observed in the initial stages of schizophrenia. I should like to refer these gentlemen to the classical study made by Dr. C. G. Jung in his "Psychology of Dementia Praecox," in which he devotes a chapter to the close relationship between hysteria and schizophrenia. He demonstrates that the complexes in both are the same, except that in schizophrenia the complex becomes, as he says, "curdled." In hysteria it does not curdle; hence, it can be modified through treatment.

As to the main topic of discussion, I was very much impressed by Dr. Grover's paper. I feel that he touched upon many stimulating problems, and I wish I had more than five minutes to discuss them. I have seen quite a number of such cases in private practice, and I would like to mention one "set of cases," which I call "folie à quatre." It concerns three daughters and a mother, all of whom showed paranoid reactions; two of them were actively hallucinating. The psychic infection came from the eldest daughter. She was sent to me by a charitable organization to whom she appealed for help. She had systematized delusions of persecution directed to a number of Wall Street firms. I thought it best to talk to her mother, and asked the patient to send her to me. To my surprise I found that she was just as paranoid as the daughter. I then saw the other two sisters, and they all showed the same paranoid trend.

Here, there was no doubt at all that it was a question of suggestion through proximity. The father had left a substantial fortune when he died a few years before and the eldest daughter lost it through injudicious speculations. She then became paranoid or probably had been so for years, and as she was the leading spirit in the family, she readily infected her sisters and her old mother, who was somewhat senile. Psychoanalytically we would say that the situation was based on an unconscious identification, which I feel is at the basis of all such cases. I would make no distinction between twins, be they homologous or not. A few years ago I reported for this association the case of a paranoid man ("Homoerotism and Paranoia," Am. J. Psychiatry, 90: 957, March 1934) who met a woman in Paris. (They were both Americans.) He was actively paranoid and he soon convinced her that his delusions were truths. She believed everything he told her, and she signed an affidavit for the American Consul in Paris that she saw detectives following him, etc. When they returned to New York City, neither Doctors Kirby, Gregory, or I could convince her that she was wrong. She was perfectly sensible in every other way, but she insisted that he was not insane, that he was really followed everywhere, in Europe and here, by detectives at the command of his father, who wanted him to become a homosexual in order that he might later act as a sexual object for him (his father). Contrary to our advice she married him as soon as he left Dr. Lamb's sanatorium. She lived with him for a few

weeks, then came to me and told me that she was convinced he was crazy. Here, too, there was an unconscious identification between the two, though the patient was schizophrenic and she was only an hysterical type, but quite suggestible.

You are aware, of course, that this same form of suggestion on the basis of identification is not only observed in single individuals, but also in whole masses. All psychic infections of hysteria are based on this mechanism. The dance and flagellation epidemics of the Middle Ages were all based on identification. Witness, for example, the strange phenomena of the Father Divine movement in New York.

All these cases throw a great deal of light on the whole problem of schizophrenia. Homosexuality also plays a great part in these cases. All the cases mentioned by Dr. Grover it seems to me were of an infantile type, who had not reached the stage of object libido. They were all more or less fixed in the narcissistic stage of development, which in predisposed cases may lead to homosexuality or paranoia.

I wish again to express my appreciation of Dr. Grover's paper, but I wish to emphasize the fact that there is nothing novel about his statement that schizophrenia and hysteria are related. The literature is full of it.

DR. HARRY STACK SULLIVAN (New York City).—It is a privilege to hear this report of a valuable kind of investigation that one might wish would become very much more frequent. Here is the research utilization of the very rich material of the state hospital in a way that does not represent an intolerable addition to the burden of over-worked staff members. It is an intelligent observation with a review of comparable instances as they are discoverable in the routine hospital records.

In the daughter, in Dr. Grover's case, we have a strong implication of the environmental conditioning or "causation" of the schizophrenic psychoses. Without any prejudice to constitutional factors in these conditionings, one may well notice that we all have to develop some ability to deal with, live with, other people. Our capacity for being a member in a group depends chiefly on our testing our essentially autistic experience, and giving priority in the direction of our behavior (and especially, our speech) to that which is consensually—by approximate agreement—valid. You will observe in Dr. Grover's cases that there has been a restriction of contact with persons outside the narrow family world. The normative process, the consensual validation of autistic, subjective, experience and of its formulation, however, has not been suspended but restricted. The denizens of the little family world came to considerable approximation in formulating the world, but the agreements were in part psychotic.

I think we may perhaps question the suitability of the term, *suggestion*, for this universal, normal, movement to approximate agreements with the behavior (especially speech and communicated ideology) of the people who are important to us. This is perhaps the most essential part of the socializing processes in the development of human personality. If we had been born in

Tahiti before the European invasion, not one of us could have avoided Polynesian ideas of himself and of the world. In its way, this is no more a matter of suggestion than is the occurrence of endemic goiter in an area where iodides are lacking. If you will, psychosis was validated in this group; somewhat more lucidly, there was a severe restriction of normative experience which might have *invalidated* the psychotic world-picture.

That negative suggestibility is pronounced in schizoid people is rather well documented—the suggestion-situation being definable in terms of the relinquishment of critique as to the other person's motives. The hysterical person is notorious for his easy adjustment of the dramatic performances to the cues from his audience. The schizophrenic's world-fantasy is not very readily influenced by the people who happen to impinge on him.

DR. MILTON M. GROVER (Harlem Valley State Hospital, Wingdale, N. Y.).—I do not think I have anything of importance to add to what has already been said, except to thank the discussors for their very kindly remarks. I feel that there is a large field for the study of schizophrenia in cases of folie à deux, and particularly where this condition occurs in identical twins. It is my hope that further studies will be made along this line.

APRAXIAS AND OTHER NEUROLOGICAL SEQUELÆ OF CARBON MONOXID ASPHYXIA.*

WITH REPORT OF A CASE.

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The problem of carbon monoxid asphyxia is one of far-reaching importance. Carbon monoxid is everywhere about us; our automobiles are constantly pouring it forth; with every puff of our cigarettes we take in appreciable amounts of this gas; the hot water heater, the leaky gas pipe, the defective furnace, all add their share to our atmosphere. The problem of the running motor and the closed garage is impressed, or should be, on the mind of everyone who uses a car. Indeed, this is considered common knowledge and, when a man is asphyxiated in his garage, the insurance companies get very suspicious, no matter how cleverly the tools are laid about. One of the writers was interested in a statement made by that great Arctic explorer, Stefansson, who spent years on end in the far North. He claims that the nearest he came to death was not on a treacherous ice floe, nor in an encounter with a polar bear, but one night in his igloo when a little alcohol stove, brought from civilization for emergency use, burned inefficiently. More recently Rear-Admiral Richard E. Byrd, while alone in an advanced station in Little America, nearly perished from the insidious effects of this same gas.

The history of this affliction no doubt extends far back into prehistoric times, when man first began to build fires in closed spaces. Sayers and Davenport,¹ in an exhaustive treatise on carbon monoxid asphyxia, have traced the subject back into the literature of antiquity, where they find reports of accidental deaths, executions, suicides and homicides occurring, for the most part, through the agency of the fumes from charcoal braziers.

* Read at the ninety-second annual meeting of The American Psychiatric Association, St. Louis, Mo., May 4-8, 1936.

The sources of exposure to this gas are covered to some extent above, and it is not the province of this paper to go into that aspect of the subject. It is felt that it would be worth while to discuss briefly the action of carbon monoxid in the system. It is well known that this gas is taken up by the hemoglobin and forms an insoluble non-oxygen-carrying carbon-monoxy-hemoglobin, which rapidly reduces the respiratory efficiency of the organism. It is perhaps not so well known that this gas exerts no toxic action on the tissues themselves. Haggard² grew hanging-drop cultures of chick neuroblastic tissue in the presence of carbon monoxid in concentrations as high as 79 per cent. Neither the rate nor the quality of the growth was affected. Yant³ and his co-workers, in experimental work on dogs, showed that the pathological picture produced by lethal doses of carbon monoxid was similar to that seen when the animals expired in atmospheres too deficient in oxygen to support life. We may assume, therefore, that carbon monoxid is not a true poison, but is better classed as an asphyxiating agent.

The pathological picture as seen on the autopsy table and under the microscope varies, of course, according to the length of life after the original injury. Since we are particularly interested in those cases who have lived for some time after the exposure, the writers have abstracted reports from Freeman,⁴ Martland,⁵ Meyer,⁶ and Strecker,⁷ who have described patients who lived longer than seven weeks. A summary of autopsy findings follows:

The pia is thickened and its vessels show connective tissue proliferation. In the cortex evidence of vascular overgrowth appears, and there are many shrunken, dark-staining, pyknic nerve cells, with clear spaces about them. Neuronophagic cells occur, filled with fat and pigment. There is some micro- and macrogial overgrowth. In the subcortical white matter, there is considerable destruction of myelin. Degenerative changes are seen in the basal ganglia, with the greatest damage in the anterior portion of the globus pallidus, which frequently shows an anemic necrosis. Vacuoles are frequently found scattered throughout the brain substance. Of course, as time goes on, the active elements of neuronophagia disappear, and the more chronic glial reactions take their place. Meyer⁶ and Strecker⁷ stress the fact that, although the globus pallidus is frequently the site of the greatest damage, it may be relatively spared, and that in many cases the white matter is the more severely affected.

The neurologic and psychiatric manifestations of the disorder are protean. The syndrome of pallidal degeneration is probably the most frequent complication. Psychiatric disturbances are common. These are usually dementing disorders, as exemplified by the case of Courtois.⁸ Complex neurologic disorders have been observed by a number of writers. Wechsler⁹ reports a very unusual case in which color vision was retained, although form perception was greatly disturbed. Shillito¹⁰ and his co-workers note that one of their cases showed an "auditory aphasia." They stress the point that neurologic complications are common in those patients who recover from an extreme degree of asphyxia. There is another matter which is worthy of attention. They noticed that some of their cases, after recovering from the initial stupor, seemed in very good shape, but later lapsed into a coma, and, if they recovered from this second period of unconsciousness, often showed evidence of severe general or focal cerebral damage. As can be readily appreciated, it would be very easy to fall into grave prognostic error if the patient should be seen in the "clear period" following the initial coma.

There is one case described in the literature by Solomon,¹¹ which will be reviewed since it brings out a number of the complications of carbon monoxide asphyxia, and has points of similarity to the case to be presented. A 30-year-old housewife was exposed to the fumes of a gas water-heater (without flue connection) for an unknown period of time. She was unconscious for three days. On the fourth day she improved (note the so-called "clear period"), but on the fifth slipped into a delirious state. Neurological examination showed cog-wheel resistance in all extremities, and right-sided pyramidal tract signs; there was excruciating tenderness of all peripheral nerve trunks, which caused her to cry out with pain, even at a time when she would react to no other stimulus. As she began to recover, it was observed that she had aphasic disturbances. Although she was able to use such things as comb and brush, she could not name them, but later learned the names much as one would pick up a foreign language. She learned to write script, but could not print. Her attempts at script frequently showed mirror writing. Commands involving direction, such as right and left, gave her trouble. She could copy simple geometrical figures, but without relation to size or position on the page. Perhaps the greatest difficulty was in use of numbers in calculation, as she had absolutely

no conception of the symbolic meaning of figures. At the time this case was reported, she was still showing slight improvement in her aphasic and agnostic disturbances, but had developed a mild parkinsonism.

Another case described in the same article also had a peripheral neuritis and suffered trophic disturbances in the skin over one heel. Rabinowitz¹² stresses the importance of these trophic disturbances, and considers that the early development of bed sores indicates a diagnosis of carbon monoxide asphyxiation. The rapid development of these lesions may well be abetted by the damage to the peripheral nervous system.

There is one aspect of this general problem which is of great importance; that is, what can we do for those unfortunate individuals who are left with relatively fixed lesions, causing aphasic and agnostic disorders? This subject seems to have been somewhat neglected in the literature, but a recent work by Weisenberg and McBride¹³ discusses the question fully and lists the available references. Goldstein¹⁴ has also been interested in this problem, and did pioneer work in the psychological analysis and restraining of aphasic patients. The opinion is expressed that retraining in many cases is well rewarded. The material should be presented through as many sense pathways as possible, but stressing those routes which the pathologic process has damaged least. The application of this last principle will be illustrated in the psychological summary of the case to be presented.

CASE REPORT.

G. S., a 22-year-old American-born male of Syrian-Jewish parentage, had developed slowly during early childhood, and was always shy and timid. The home situation was very difficult, and he early became a behavior problem. Finally he was admitted to a reform school. The father, having placed his other children in state institutions, emigrated to Syria and steadfastly refused to assume any responsibility for his family. While at the state school, our patient learned the printing trade, and followed it successfully after leaving the institution. He held his job for a year and a half, when the concern for which he was working failed. He was unable to find further employment, due in part at least to the business situation. During a period of about two years he was idle and became increasingly depressed. He spoke of suicide, and made one attempt with gas, which he terminated when he began to feel dizzy. Six weeks later,

April 18, 1933, at 1.40 a. m., he was discovered in a gas-filled bathroom, in a comatose condition. He remained in a deep coma for a period of 18 hours, at the end of which time he began to rouse a little. Three days later, he became quite restless, and on April 23 was admitted to Butler Hospital. At the time of admission he was in a semi-comatose state, uncooperative and at times actively resistive. There was tremor of the left arm. Hyperreflexia localized to the right arm was present. His neck was rigid, and flexion caused considerable pain. His only vocal productions were unintelligible sounds. A lumbar puncture done shortly after admission showed an initial pressure of 500 mm. of water. He did not eat or drink for seven days, and was carried along with intravenous glucose. On the third day after admission he spoke a few words, such as "nurse" and "my head aches," but could not carry on a conversation. Another lumbar puncture showed a reading of 274 mm. Although he was still uncooperative and resistive it was judged from the patient's facial expression and occasional verbal productions that he knew what was going on about him. As time went on he improved and got up and about. He seemed to have difficulty in recognizing objects, but whether this was due to a visual defect or a perceptual loss could not be definitely determined. A visual field test revealed a questionable homonymous defect on the right. He showed a slow return of the use and understanding of speech, beginning about four weeks after the original injury. At the end of three months, he was able to read type and script with some difficulty, but could not write or print so much as his own name. He was able to dress himself, with the exception of tying his own shoe-strings. By dint of great effort during the next few weeks he trained himself to write a barely recognizable approximation of his own name in script. In spite of repeated demonstrations and hours of practice he was still unable to knot his shoe-laces. He showed no further improvement in skill until the retraining program was started.

The patient suffered from occasional depressed spells when he felt that he was making no progress, but for the most part he was pleasant and agreeable. In March, 1934, the patient had so far improved that he was able to go to work on the farm, where he did fairly good work, in spite of the fact that it was hard for him to learn new procedures. For instance, it was extremely difficult for him to put the sides on a wheelbarrow. In April an encephalogram was done. The ventricular filling was not complete, but there was sufficient air to determine that there was no demonstrable atrophy present. He continued to work on the farm, and seemed quite contented until March 10, 1935, when he had an epileptic seizure, which was apparently of the grand mal type. These seizures have continued up to the present time with varying frequency. During the past eight months he has also had a number of petit mal attacks. During his retraining period he learned how to express himself in script writing, but, in spite of the fact that he was a printer by trade, he has never learned to use printed lettering.

PSYCHOLOGICAL SUMMARY.

The patient was first seen for a psychometric examination on August 3, 1933. At this time the Arthur Point Scale was administered, together with several tests of immediate memory. The total score obtained on the Arthur Point Scale was below the lower limits of the norms, which begin at five years and six months. All scores but one were below the five year level. Form perception and visuo-motor coordination, as tested by the various form boards, were very inferior. He seemed capable of only the crudest sort of form differentiation, discriminating only pointed, flat and curved surfaces. Response to visuo-symbolic material (Healy I) was somewhat better, but still not above the five year level.

On tests of repetition or immediate memory, his performance ranged from the four to the ten year levels. Memory for words and digits was at about the five year level. Memory for meaningful material compared with the average seven to eight year old child. His best performance was obtained on a test of memory for objects visually presented. It was noted at this time that the patient was able to read with fair understanding, but that he could not write. The Stanford-Binet was administered on October 20, 1933. Alternate tests were substituted for those making the greatest demands on visuo-motor coordination. The patient obtained a mental age of ten years and eight months. On November 22, 1933, patient was given a test of manual skill. It was found that he was as proficient as the average college student on all tests of skill which did not require visual cues. On tests of eye-hand coordination (triple plate tapping and pursuit tests) he was markedly inferior, not even approaching the lowest score obtained by a college student. No loss in the understanding and appreciation of numbers and number relationships was observed. His difficulties with arithmetical problems seemed to result from his general intellectual deterioration and his confusion over the spatial relationships of figures.

The results of these tests were interpreted as indicating intellectual deterioration, with a special deficiency in the visuo-motor field. Judging from his performance on the Binet and on tests of "logical memory," proficiency in the verbal field had been best retained.

Some years before his admission he had been given a psychometric examination, achieving an I. Q. of 105 on the Stanford-Binet, 106 on the Porteus Mazes.

Beginning November 24, 1933, the patient was seen daily in an attempt to retrain him in writing. For several months prior to this time, the patient had been attempting to teach himself to write. Nurses and fellow patients had occasionally tried to help him by giving him letters and words to copy. At the time of the first interview he was able to make barely recognizable approximations of about ten letters of the alphabet. At the beginning of the re-training period an attempt was first made to build up his ability to reproduce visually perceived figures. He was given squares, circles, triangles, and diamonds to trace. This he was able to do quite well but, when asked to copy the figures which he had traced, he had great difficulty. At the end of four days he was no more able to copy a diamond than he had been at the first interview. Similarly, tracing letters failed to improve his ability to copy letters. Accordingly this method of attack was abandoned. A new approach, which consisted of a combination of verbal direction and manual assistance, was tried. The patient's hand was guided through the various motions utilized in writing, and at the same time the motions being made were carefully described. In this way the patient first learned to move his pencil at command, up, down and to the right and left. In this manner he was also taught the difference between a straight line and a curved line. Next, the motions involved in writing an "a" were described to him as they were made. For example: "Make a curved line toward your left hand, and down. Now continue the curved line toward your right hand, and up to your starting point. Now go straight back down to the line, and end in an upward curve." This process was repeated until he was able to make the letter without verbal or manual assistance. In learning new letters every resemblance between the letter to be learned and letters already known was pointed out. For example, and "h" was described as starting like an "l," and ending like the latter half of an "n."

The patient was able to learn by this method. At the end of the first week he could make about 12 of the simpler letters without assistance. Once a letter had been "learned" by this verbal method, he was able to improve its legibility by practice between retraining periods. He was then taught to combine letters and to write simple words. In writing words, it was found necessary at first to have him say each letter as he wrote it, to avoid repetition and omission

of letters. It was also necessary for him to write with a ruler, since he was unable to follow a line.

The method of verbalizing movements was tried in teaching the patient to tie his shoes. He had been unable to learn by means of visual demonstration. The patient was told what to do with his hands and fingers in tying a bow knot. After an hour's work he succeeded. At the end of a week's undirected practice he was able to tie his shoes in less than 30 seconds, three out of five trials.

At the end of five months' retraining (approximately five hours weekly), the patient could write—poorly, but legibly. He could write, however, only those letters and figures which he had been taught. For instance, he could write script but he could not print. He could make Arabic numerals but not Roman numerals. His ability to reproduce visually perceived figures had not improved. He was no more able to copy a geometric diagram than he had been before the retraining period. He could not follow a line or keep a margin, and he was unable to write figures in columns. A tendency to repeat and omit letters persisted.

SUMMARY.

The general problem of carbon monoxid asphyxia is reviewed. The serious neurological complications are enumerated. Special attention is given to the reports of aphasic disturbances. The fact that the damage to the nervous system can be widespread, and not simply confined to the globus pallidus, is pointed out.

A case is reported, where the patient was revived after a suicidal attempt. He showed loss of the ability to perform certain skilled acts. Agraphia was present. A convulsive disorder has more recently supervened. Due to severe visuo-motor incoordination, he was unable to learn through concrete example, and a carefully planned retraining program, in which all instructions were completely verbalized, was the means by which the function of written speech was returned to the patient.

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DISCUSSION.

DR. ALFRED P. SOLOMON (Chicago, Ill.).—I am interested in the rather close correlation between the symptoms of Dr. Nichols' patient and those of my patients which he has seen fit to quote in his paper. Such case studies offer an opportunity for selective study of agnosia and paraphasia because during recovery there is a reappearance of the separate functions in almost an isolated form. The close relationship of the clinical picture to that of an acute psychosis has already been stressed. However, I wish to again call attention to the symptom perseveration which was in my case one of the most persistent of the speech disturbances. There is experimental reason to believe that anoxemia specifically causes this symptom.

I would like to ask Dr. Nichols whether his patient exhibited any paranoid symptoms. About a year after the accident and subsequent to my case report in the literature my patient gradually developed systematized paranoid delusions which became so severe that she had to be committed to a state hospital. At that time the patient had practically completely recovered from her aphasia and agnosia and had a mild parkinsonian state.

DR. ANDREW L. SKOOG (Kansas City, Mo.).—A case like this probably should be discussed very thoroughly, because it is of interest to us today. We are probably having more and more of these cases accumulating from time to time. However, the question arises whether or not some milder cases, those not presenting the severe symptoms, may be attracted for clinical studies. I have seen several cases of the severer type. One case, I recall, that apparently developed psychosis with a simple dementia. The man was able to be handled by his wife at home, quietly, and eventually died. Unfortunately, no autopsy was obtained.

I would like to ask if he has studied any of the milder cases. I think many of those milder cases are found in factories or garages.

DR. IRA C. NICHOLS (Providence, R. I.).—This has been a very stimulating case in which to try to study out how the various skills could be fractionated in this way.

In regard to the presence of acalculia, I don't think this case shows it as well as many that have been described in the literature. He seemed to have an adequate appreciation of the symbolic meanings of numbers. It seemed that most of his difficulty was in setting down figures in the proper relation so that the more complex calculations could be carried out.

The mental picture has been spoken of here on the floor. He has been for the most part fairly contented and agreeable. At times, however, he has tended to be a little paranoid and to react with feelings of depression, especially when given material to work with that was a little too difficult for him.

As to the study of the milder cases of carbon monoxid asphyxia, I have had no personal experience and have nothing to say on the subject.

BIOCHEMISTRY OF THE PSYCHONEUROSES— A REVIEW.* †

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In recent attempts to arrive at an interpretation of the etiology of the functional mental disorders the chemist has been playing an increasingly important rôle. The problem is being attacked from various angles. The colloid chemist, the physical chemist and the biochemist are all trying to break through the confusion that has hung for many centuries over the realm of the mentally disordered. The literature on the subject, however, is in a chaotic state. This paper will concern itself with some blood biochemical studies ‡ that have been made of the psychoneuroses.

The "psycho-biochemist" is not alone in his inability to interpret his data. It is well to point out that the colloid chemist also is as yet unable to correlate cellular colloidal behavior with mental states. We find, for instance, Ludlum and Taft ⁴¹ in 1927 stating "that it is possible that there is a correlation between the colloidal

* This article is the first of a series of four dealing with the blood biochemical studies of the psychoneuroses, dementia praecox, manic depressive insanity and epilepsy. The research was supported by funds from the Council on Research in the Social Sciences of Columbia University.

† The term psychoneuroses as commonly used covers a wide range of borderline mental disorders of a non-psychotic character. The differences in etiology and symptoms between the various types of psychoneuroses, such as neurasthenia and conversion hysteria, may vary greatly. For example, the former may be related to an inherited biological weakness and the latter may be a "state of mind" or actual malingering. In fact the differences between the various neurotic reaction types may be as great as the differences between certain of the psychoneurotic and psychotic types.

‡ It appears that the blood studies that have been made are of more significance than those of the other biochemical fluids. Rowe, 51, p. 146, states that "The blood is the great thoroughfare of the body wastes. The delicately balanced regulating mechanisms of the body maintain the concentrations of certain important constituents at surprisingly constant levels when they are determined under definite conventional limitations. To this fact is attributable the very real significance that attaches to such levels."

characteristics of the blood and tissues of the brain, and mental states, including velocity of physico-chemical action and psychic action." Bancroft and Richter³ in 1931 made the suggestion that many of the "functional disorders" may be nothing more than an abnormal degree of dispersion of the nerve colloids. They believed that specific abnormal mental conditions may depend upon certain coagulating agents and may be alleviated by treatment with peptizing substances such as sodium rhodanate and conversely other specific abnormal conditions may depend upon certain peptizing agents and may in turn be alleviated by coagulating substances like sodium amyta. Experiments with mental patients and adequate control groups by other investigators²⁴ have failed to confirm the contentions of Bancroft and Richter that the functional psychoses show a correlation between certain syndromes and the state of the dispersion of the cell colloids. Lang³⁸ in 1934 expressed the belief that "the theoretical attempts to explain physiology and nerve cell function in terms of colloid behavior cannot, in the present hypothetical and inconclusive state of these theories, be accepted as correct explanations of psychotic symptoms and syndromes."

The biochemist is not better situated than the colloid chemist insofar as conclusive results are concerned. Unfortunately, the qualified "psycho-biochemist" is still a rarity.*

It would appear that for almost every investigator who finds one biochemical picture of the psychoneuroses there is another investigator who finds that this biochemical picture is not present. It must be said at this point, however, that many uncontrolled factors have entered into a great number of the investigations and have doubtlessly altered the results. Some of the uncontrolled factors that may distort the results and consequently disqualify the conclusions are indicated below. Nearly all of these variables act cumulatively and increase the magnitude of the experimental error.

* Freeman¹⁵ in an address before the American Medical Association in 1931 states that "Few biochemists are versed in psychiatry . . . and few psychiatrists have more than a bowing acquaintance with such terms as colloidal dispersion, interfaces, ionic dissociation and oxidation-reduction. Psychochemists, therefore, will be grounded in biochemistry as well as in psychiatry and will investigate the problems of normal and abnormal behavior from the standpoint of altered chemical reactions in that master tissue of the body, the central nervous system."

1. Unreliability in psychiatric classification of mental cases.
2. Number of cases studied.
3. Errors of the biochemical methods and techniques.
4. Variability within subjects from day to day and from week to week.
5. Lack of control of physical and mental state of the patients before and during blood sampling.
6. Lack of adequate control groups.
7. Inadequate statistical treatment of data.

These factors will be separately discussed below:

I. UNRELIABILITY IN PSYCHIATRIC CLASSIFICATION OF MENTAL CASES.

The classification of the mentally disordered is still in an uncertain state. We find psychiatrists differing among themselves in their diagnosis of the same individual.* There is as yet no way whereby we can with certainty label this case a psychoneurotic, this one a schizophrenic, this one a manic-depressive and that one a paranoiac. All too often an individual may present a combination of symptoms that are characteristic of different disorders.† It is obvious, of course, that persons suffering from particular organic conditions that may affect the blood picture should be omitted as subjects.

2. NUMBER OF CASES STUDIED.

It is amazing how many investigators will, after obtaining data from a few subjects, generalize their findings to cover vast psychiatric territory. An intensive study of one individual over an

* In the transfer of patients from the Boston Psychopathic to the Boston State Hospital there was disagreement in diagnosis in 42 per cent of the cases (discarding undiagnosed cases, 34 per cent). Cf. E. B. Wilson, Statistical Comparison of Psychiatric Diagnosis in some Massachusetts Hospitals during 1925-26. *Quart. Bull. of Mass. Dept. of Mental Disease*, 11: 6-19, 1927.

† The results obtained thus far in the study of mental disorders indicate a non-specific etiology in which either or both organic and psychogenic causal factors may be operating. Thus the nervous system is apparently dependent for its proper functioning on satisfactory conditions of nutrition, oxidation, hydration and excretion, as well as healthful attitudes and emotions operating in equilibrium. (Cf. *The Problem of Mental Disorder*. Madison Bentley and E. V. Cowdry, New York: McGraw Hill and Co., 1935.)

extended period of time has its value; but it, too, should be supplemented by a study of an adequate number of subjects. This is particularly true when the variables are numerous and the syndromes not clearly defined. The number of subjects studied is adequate only when the addition of more subjects does not significantly alter the statistical results.

3. ERRORS OF BIOCHEMICAL METHODS AND TECHNIQUES.

This factor has been too often neglected by investigators in the interpretation of results. The error of the particular biochemical method employed may be small but still as large as the difference between the results obtained from a group of neurotics and a group of normal controls. The variability due to method should be determined and allowed for in the interpretation of the means. In similar fashion it may be said that although the error of the biochemical method may be sufficiently small to be neglected, in the final analysis of the results, the personal equation of the technicians may in some cases account for the differences obtained between the two groups. Unfortunately the error of the method employed as well as the degree of precision of the technicians have generally been omitted from the presentation of results.

4. VARIABILITY WITHIN SUBJECTS FROM DAY TO DAY AND FROM WEEK TO WEEK.

Only too frequently has an investigator taken a blood sample from a mentally disordered person, analyzed its content and then assumed that the value obtained was characteristic of that person at all times. We know that when certain pathological conditions, such as diabetes, kidney disorders, etc., are present, the blood picture presents a certain chemical pattern that remains relatively constant until the condition is removed. However, in healthy individuals the normal range has rather wide limits. Normal individuals vary in the concentration of their blood sugar, phosphorus, etc., from day to day and week to week.* It is not yet definitely known

* Quastel⁴⁸ in speaking of the sugar tolerance studies of psychotics states that ". . . the usual practice has been to make a single test of sugar tolerance of the patient and to relate this to the psychosis with scarcely any reference to the physical condition of the patient at the time of the test, . . .

whether the mentally disordered are to be considered as organically pathological or organically non-pathological. Hence, it is obvious that the most informative blood picture of the psychotic or neurotic would be that obtained over an extended period of time during which ample opportunity was afforded to determine whether the variability is within the normal limits. This means that the blood samples should be periodically taken for the investigation of the blood values and their constancy.* Obviously if it is found that the individual does vary considerably, then any single measure is valueless as an index of the mental disorder in question although it may be quite valuable as an index of the individual's state at a particular time. The index of variability might, however, yield valuable information should it be found that there is considerable deviation from day to day and week to week. In studies over an extended period of time seasonal and meteorological variations and periodic phenomena such as menstruation should be considered in the interpretation of results. The importance of seasonal variations and the way chemical levels vary in normal and abnormal subjects in adapting to particular environmental situations has been stressed by Petersen⁴⁷ in a recent series of studies pertaining to the patient and the weather.

5. LACK OF CONTROL OF PHYSICAL AND MENTAL STATE OF THE PATIENTS BEFORE AND DURING BLOOD SAMPLING.

The results of biochemical studies with mental patients are frequently invalid because of lack of control of the physiological conditions such as excessive fatigue, sleep, food, mental and emotional reactions, medical treatment and drugs previous to the test. A

there has been an insufficient description of the mental condition of the patient at the time of the test. The result of this practice, carried out in a statistical manner on a large number of patients, has been to produce a series of sugar tolerance curves bearing apparently no relation to the psychosis."

* Dunbar^{18, p. 96} states that ". . . a striking fact is the scarcity of observations taken serially at brief intervals over a long period of time. The importance of such observations is just beginning to be appreciated in connection with certain important problems in the organic sphere which can scarcely be approached in any other way. Such observations, however, are essential if important deductions are to be made in the field of psycho-somatic relationships."

controlled composure is essential before blood samples are taken. Emotional excitement, for instance, with the accompanying over-ventilation and possibly increased secretion of adrenalin may influence the blood gases and acid-base equilibrium as well as raise the blood sugar and lactic acid. It is also recognized that muscular contractions or rigidity may raise the calcium and lactic acid. The greater variability reported in mental patients may be associated with uncontrolled factors of this kind. Sedatives may be used only with due regard for the possible distortion of the blood chemistry or the introduction of another variable. Random and intermittent blood sampling may give rise to unreliable data and such procedures possibly account for the diametrically opposed results so frequently found in the literature by equally competent investigators.

6. LACK OF ADEQUATE CONTROL GROUPS.

The reader who studies the literature on this subject is dismayed by the widespread neglect of an adequate normal control group as a check on results obtained from the mentally disordered group. A true scientific approach to the problem would necessarily dictate the inclusion of such a group. It is difficult to tell much about the psychotic or neurotic group being studied unless we have a group of normals, matched for age, sex and other factors, with which to compare it. Frequently the control group used are "hospital controls" and not normal subjects. In certain biochemical studies, however, the use of a control group is not indicated, especially where the comparison of an individual with himself appears to be more important.

7. STATISTICAL TREATMENT OF DATA.

Few biochemists may be versed in psychiatry but still fewer psychochemists are qualified in statistics. The results of only a very small number of studies have been treated adequately from a statistical viewpoint. First we ought to be sure that we have a large enough number of physically normal subjects and that our patients really characterize the syndrome being studied. Sampling errors appear to be particularly insidious in the study of mental disorders. Then we ought to take into account the error of the biochemical method and the precision of the technician. The blood

sampling should be repeated a number of times to arrive at some value that is characteristic of the individual. An adequately matched control group should serve as check of the group being studied. Finally, the results should be expressed in terms of averages, standard deviations, coefficients of variation, and reliability of differences between the normal and the mentally disordered groups. According to Fisher's criteria for biological studies of small samples a difference is reliable when the critical ratio (d/σ_d) is 2 or more, that is, the chances are 95 in 100 that the observed difference is a genuine one and not due to chance. In certain instances the "consistency of trends" may be more significant than the differences between means. Also Fisher's¹⁶ "analysis of variance" is a technique which is relevant to certain biochemical studies of mental disorders. Inept statistics may be worse than none at all. However, complete indifference to statistical treatment and interpretation not only hinders the reader but also prevents comparisons of results of different studies having the same purpose.

The biochemical constituents that have been most frequently investigated are blood sugar, acid and alkaline reserve, calcium, phosphorus, nitrogenous substances (proteins, total nitrogen, non-protein nitrogen, ammonia, uric acid, etc.) and chlorides. No claim is made for the completeness of the studies cited below; they are rather a selection of the research in this field based upon the thoroughness of the experimental procedures and observed data.

Blood Sugar.—Kilduffe^{38, p. 52} states: "The sugar metabolism is controlled by the endocrine secretions acting as inhibitors and accelerators. Normally these are accurately balanced and by their compensatory interaction maintain the blood sugar within normal levels." Normal fasting blood contains from 80 to 120 mg. per 100 cc. of blood. Peters and Van Slyke^{46, p. 107} state that there are numerous extraneous factors which influence the blood sugar during the fasting state and it is not surprising to find a high degree of variation. Most investigators have noted that the variation in a given individual is almost as great as that encountered in any group of normals.*

* Albritton found the individual blood sugar curves to vary widely in experiments with dogs even following the intravenous injection of glucose with a Woodyatt pump. Cf. Am. Jr. Physiol., 69: 548, 1925.

Heidema²⁵ in 1922 using Bang's micro-blood sugar method and making several repetitions, found that the blood sugar value for neurotics was normal. Bowman⁵ in 1922 studied 229 consecutive admissions to the Bloomingdale Hospital among which were included 19 psychoneurotics. The patients' blood was analyzed for dextrose. The findings revealed essentially normal values (average 104.7 mg.) for the psychoneurotic group.

Genzel¹⁷ in 1923 made a study of seven psychopathic individuals. Using the Benedict blood sugar method, he found fasting blood sugar values between 80 and 90 mg. He was unable to detect a relation between blood sugar and affectivity. Henry and Mangam²⁷ in 1925 studied three psychoneurotics and analyzed the blood for dextrose with the Folin-Wu blood sugar method. They found non-fasting values within normal limits (133, 143, 133 mg.).

Bowman and Kasanin⁶ in 1929 found in a study involving repeated tests on four psychoneurotics and a control group of 41 normal individuals that the average fasting blood sugar of the neurotic group was normal (93.5 mg.) and that the range was normal. They could find practically no correlation between mood and blood sugar variations. They felt that physiological conditions, especially fevers, had a more direct relationship to high blood sugar values than did the emotional state. Szondi and Lax⁵⁷ in 1929 studied 31 neurasthenics and 26 normals and found normal values in blood sugar. Whitehorn⁶¹ in 1934 reported an extensive study of the blood sugar of 958 psychotic patients. Thirty-two were examined during extreme excitement. He concluded that "emotion produced rarely if at all any rise in blood sugar." Such a failure to respond to emotional excitement may have been due to metabolic inertness and hence a significant factor in their illness.

Some investigations have failed to reveal normal findings in blood sugar in the psychoneurotic. Looney³⁹ using the Folin-Wu method, in 1924 made a study of 11 hysteria patients and 19 controls. He made duplicate analyses at intervals and found a slightly lower average blood sugar (84.5 mg.) in the neurotic group than in the controls (89.9 mg.). Nielsen⁴⁴ in 1934 examined a group of 30 neurotics with "vegetative imbalance" and a group of 102 controls. Using the Folin-Wu method he found that the neurotics had slightly lower values than the controls. DeGiacomo¹¹ in 1925 studied a group of 37 cases including neurasthenics, psychasthenics,

and hysterics, making two determinations for each patient. He found a slight but constant hyperglycemia in those neurotics. The hyperglycemia was much more common (11 out of 13) in the cases of hysteria than in the other psychoneuroses. The investigator felt that thyroid hyperfunction was related to the hyperglycemia.

Several investigations have been made of the blood sugar tolerance curves in psychoneurotics. Some have found normal values. Schwab⁴⁴ using the Benedict and Hartman-Shaffer methods in a study of 25 neurotics (hypochondriasis, neurasthenia, psychastenia, anxiety and hysteria) in 1922 found that the blood sugar curves were generally normal.

Jacobi and Koritter³⁰ studied six neurotics in 1922 using the Crecelius-Seifert blood sugar method. They found normal blood sugar curves in four of the cases while two cases showed abnormal curves. Nielsen⁴⁴ in 1934 found that the blood sugar curves of neurotics and normals were practically alike.

Other investigators have failed to find normal results. Mann⁴² in 1925 using the Folin-Wu method studied a group of 152 mental patients including 31 neurotics (anxiety, obsession and hysteria) and found abnormal curves with sustained hyperglycemia in the majority of cases. The investigator expressed the belief that a disordered carbohydrate metabolism accompanied a large proportion of early and chronic mental cases. Craig¹⁰ in 1927 using the Calvert method in a study of 50 patients suffering from anxiety neuroses found there was an abnormal delay in the return to the original starvation level in 87 per cent of the cases.

Szondi and Lax⁵⁷ in the study mentioned above found that the neurotics showed only a 31 per cent increase in blood sugar after the ingestion of 50 gm. of dextrose while there was a 70 per cent increase in the normals. Gillespie¹⁸ in 1929 studied the sugar tolerance of 25 "fatigued" neurotic subjects without organic disease and found that in more than one-third of the subjects studied the sugar-tolerance was decreased. Katzenelbogen and Friedman-Buchman³² in 1933 studied the sugar tolerance curves of 31 patients under fasting conditions (six anxiety, six obsession, nine hysteria, ten hypochondriasis) and found that 64 per cent of the psychoneurotics' curves were abnormally high and believed that disturbances of carbohydrate metabolism were related to these affective disorders. In all of these studies sluggish or crippled

compensatory mechanisms may be a causative factor in their deviations from more normal responses.

Diethelm¹² in 1936 studied the dextrose tolerance of 26 cases of neurotic and psychotic patients during acute states of anxiety, tension, fear, and depression. Although in isolated and depressed moods, different degrees of acuteness and intensity did not affect the curves, in general, the more acute an emotion the more marked were the changes in the curves for sugar. In acute emotion the curves showed a steep rise, and usually a rapid fall; and roughly the more intense the emotion the higher the apex of the curve for sugar.

Acid and Alkaline Reserve.—Kilduffe,^{33, p. 131} in speaking of the pH of the blood, states, "From the complexities of metabolic activities in general with the resultant almost constant production and absorption of acid and alkaline bodies, it is readily apparent that the maintenance of the blood reaction at a constant level necessitates almost constant as well as profound variations of the electrolytes of the plasma." Normal arterial blood plasma according to Shock and Hastings⁵⁵ has a pH from 7.35 to 7.45. The CO₂ combining capacity of normal blood plasma is between 45 and 60 volumes per cent. Kilduffe³³ states the the normal range for pH is from 7.3 to 7.5 and for CO₂ combining capacity from 50 to 75 volumes per cent.

There have been innumerable attempts to see whether the acid-base equilibrium of the blood is related to the incidence of the neuroses. Schultz⁵³ in 1907 using a modification of the Friedenthal method of determining blood acidity made a study of seven hysterical and ten neurasthenic patients and found no deviation from the normal in these functional neuroses.

Henry and Mangam²⁷ in the study previously mentioned found that 13 neurotics had normal alkaline reserve as determined by the Van Slyke and Cullen method. Gillespie¹⁸ in 1929 using the Cullen colorimetric method found that 25 "fatigued" neurotic subjects had normal blood pH. Rich⁴⁹ in a study of 303 children who had been rated on the personality trait of excitability found no significant correlation between the alkaline reserve of their blood and their rating on excitability.

Wolff⁸² in 1931 studied the alkaline reserve of 16 cases of neurasthenia and hysteria. He used the Van Slyke and Cullen

method and found a normal alkaline reserve in all of these cases. Appel, Farr, and Hodes¹ in 1931 found a normal total base content and alkaline reserve in a group of seven neurotics.

Not all investigators have found normal conditions of the acid-base equilibrium in the neurotic. Obraszov⁴⁵ in 1920 studied the alkaline reserve of a large group of psychoneurotic children and found a raised alkaline reserve. Laignel-Lavastine, Cornelius and Vincent³⁷ in 1928 studied seven cases of anxiety neurosis and found that in four cases there was pronounced alkalosis as shown by a high pH and an increased alkaline reserve (above 70 volumes per cent CO_2 combining capacity).

Laignel-Lavastine and Cornelius³⁶ in 1930, in a study of 13 chronic anxiety neuroses, using the Van Slyke method for determining organic acids found evidence of alkalosis in most of the cases. Walinski⁵⁰ in 1930 found a lowered alkaline reserve in 15 neurasthenic patients averaging 45 volumes per cent.

Calcium and Phosphorus.—Kilduffe^{33, p. 79} remarks that "Calcium is concerned with the maintenance of physiological equilibrium and the normal irritability of the nervous system." Calcium has an influence on the excitability of the motor systems of animals. In tetany there is a deficiency in the calcium concentration of the blood. The calcium content of normal blood serum is from 9 to 11 mg. per 100 cc. Tómasson⁵⁸ considers 10 and 12 mg. per cent as limiting values for serum calcium in adults; with 11.6-12 mg. per cent as "high normal values" and 10.4-10 mg. per cent as "low normal values"; both values signifying the transition of one between the physiological and pathological state. Kilduffe^{33, p. 87} states that "Phosphates act as buffers but their relation to normal and pathological states is not yet determined." The normal inorganic phosphorus content of the blood plasma is from 3 to 5 mg. per 100 cc. The Ca/P ratio is probably more significant than either calcium or phosphorus independently. The Ca \times P should equal approximately .40.

In a study of the blood calcium on 78 mild mental cases of various syndromes with the Clarke-Collip method at the Ring Sanitarium, Arlington Heights, Edwards¹⁴ found 43.5 per cent of the cases had 11 mg. or above, 32 per cent from 11.0 mg. to 11.6 mg. and 11.5 per cent above 11.7 mg. The mean for 14 psychoneurotics

was 10.8, S. D. 0.62 (range 9.9 to 11.7 mg.) and 16 control subjects 10.4, S. D. 0.88 (range 9.6 to 10.9 mg.). Although the variability is greater in the patients the difference between the means of the two groups is not significant. Edwards stresses the difficulty of interpreting data obtained from mental cases since he found that physical exertion in resisting venesection often raised the blood calcium.*

Henry and Ebeling²⁶ in 1926 found in a study of 11 normals and 10 psychoneurotics that the serum calcium was normal as determined by the Clark-Collip method. In a study of seven normals and 61 cases of personality disorder they found that the blood phosphorus was within normal limits. The Briggs blood phosphorus method was used.

Armstrong and Hood² in 1927 found in a study of one anxiety and one neurasthenic patient that the serum calcium was normal.

Other investigators, however, have found abnormal results in studies of the neurotic. Kylin and Myhrman³⁵ in 1924 studied 18 individuals suffering from vagatonic neurosis and found that the blood calcium content was subnormal, normal, and above normal in different cases. These investigators were of the opinion that the relation of blood calcium to blood potassium was important in arriving at an understanding of the etiology of these neuroses.

Kallnikova³¹ in 1930 found increases in blood calcium in a large group of psychoneurotic children.

Nitrogenous Substances.—The picture of nitrogen metabolism is an important reflection of the general state of anabolic and catabolic activities of the body. The urea nitrogen of normal blood is 10-15 mg. per cent; of non-protein nitrogen 22-30 mg.; of uric acid 2-4 mg.; of creatinine 1-2 mg.; of total proteins 6.7 to 8.7 per cent; of total albumin 4.95-7.7 per cent and of total globulin 1.0 to 2.5 per cent.

Bowman⁵ in 1923 found that the blood of 19 psychoneurotics analyzed for non-protein nitrogen and uric acid was normal. Looney³⁹ in 1924 using the Folin-Wu method and making duplicate analyses at intervals, studied 11 cases of hysteria and 19 con-

* In the Fatigue Laboratory at Harvard an increase of 10-20 per cent was observed in the calcium with physical exercise. Cf. Keys, A., and Adelson, L., Am. Jr. Physiology, 115: 539, 1936.

trols. He analyzed their blood for total nitrogen, urea, amino-acid, uric acid, creatinine, creatine, and undetermined nitrogen. He found that the figures for the psychoneurotics were normal.

Henry and Mangam²⁷ in 1925 investigated the urea nitrogen, non-protein nitrogen and uric acid of 13 psychoneurotics. They used the Folin-Wu method and found that these patients had normal amounts of urea nitrogen, non-protein nitrogen, and uric acid unless organic ailments were present. Rich⁴⁹ in 1928 studied the relation between the blood creatinine in 154 normal subjects and their rating scores on the trait of excitability. He found a correlation coefficient of -0.21 PE .05 which might indicate a slight tendency for the more excitable persons to produce less creatinine.

Some investigators have failed to find normal values in their studies of the neurotic. Chrometzka⁹ in 1932 using the von Starlinger method for albumin studied 49 patients among whom were included cases of vasoneuroses, ulcer neuroses, and neurasthenics. He found an albuminemia which caused the albumin-globulin quotient to be high.

Chlorides.—The chloride ion is found in all the tissues of the organism. It is the major anion concerned in the regulation of the total osmotic pressure. The chloride value of blood plasma estimated as sodium chloride is from 570 to 620 mg. per 100 cc.

Bowman⁵ in 1923 found normal chloride values in a group of seven psychoneurotics studied at the Bloomingdale Hospital. The study of Henry and Mangam²⁷ in 1925 showed that the group of 13 neurotics had normal chloride quantities in the blood. Appel, Farr, and Hodes¹ in 1931 studied the blood chloride of seven psychoneurotics and 15 normals using the Wilson-Ball modification of the Van Slyke method and found normal blood chlorides in the psychoneurotic group.

Variability.—In general it has been found that the neurotic does not differ essentially from the normal in the values of his blood constituents. However, when the individual and group variability of the blood constituents of neurotics is studied over an extended period of time and when this variability is compared with that of normal controls, some valuable information is obtained.

Weston and Kent⁶⁰ in 1912 compared the variability of blood cholesterol of a group of 28 normals with the variability of the blood cholesterol of a group of 24 "insane" patients and found

the variability of the latter almost twice that of the former. Hammett²² in 1920 studied the total nitrogen, non-protein nitrogen and sugar of the blood of small groups of mental patients and nurses free from metabolic disorders. He found that while the total nitrogen, non-protein nitrogen and sugar of the blood vary in the same individual from week to week, there is a tendency for the level of these variations to be characteristically individual, that is, individuals might be differentiated by the amount of variation. The order of relative variability was creatinine, total non-protein nitrogen, total nitrogen, creatine, sugar, uric acid, amino acid, urea and residual nitrogen.

Hammett²³ in 1920 studied the total nitrogen, non-protein nitrogen, urea nitrogen, creatinine nitrogen, creatine nitrogen, uric acid nitrogen, amino acid nitrogen, residual nitrogen and sugar of the blood of a group of 17 subjects. This group included patients and nurses in a hospital for the "insane." Classification of the emotional status of the individuals was arrived at by consultation with the physician in active contact with the patients and nurses and by personal observation over considerable periods of time. Analyses were performed at weekly intervals for periods ranging from three to six weeks. As a basis of correlation between the emotional and metabolic stability, the coefficient of variability for each blood constituent for each individual was taken as the total variability of the intermediary metabolism. Hammett found a relation between a relatively high metabolic stability and emotional stability and between a relatively low metabolic stability and a condition of temperamental excitability.

Suitsu⁵⁶ in 1920 studied the alkaline reserve of 14 normals and 37 mental cases and found that while the alkaline reserve of the mental patients fell within the normal limits, the variability seemed to be higher in the mentally disordered than in the group of normals.

Glaser¹⁹ in 1924 made a study of the serum calcium of a group of neurotics. He found considerable differences in the calcium concentration of the serum on different days in certain patients with functional neuroses and emotional changes.

Kallnikova³¹ in 1930 found that the blood potassium and calcium is subject to greater fluctuations in psychoneurotic children than in normal children.

Quastel⁴⁸ in 1932 found that the hyperglycemic index varied greatly with the emotional state of the patient at the time of the test. He felt, as a consequence, that the results of studies of blood sugar in the mental disorders might have been very different had repetitions of the determinations been made at different times.

Schube⁵² in 1932 using the Myers-Wardell cholesterol method studied 54 normal and 200 psychoneurotic individuals from a neuro-psychiatric point of view. He found a much greater variability in the latter group than in the former.

Looney and Childs⁴⁹ in 1933 studied the blood cholesterol of a group of normal and abnormal subjects and concluded that no single determination of cholesterol can be taken as characteristic since the variability is so great and the range so wide.

Goldstein²⁰ in 1935 using the Folin-Wu sugar and creatinine method, the Bloor cholesterol method, the Youngburg phosphorus method, the Clark-Collip calcium method, and the Wilson-Ball chloride method studied a group of 19 normal subjects. Blood samples were taken at intervals of three weeks until three blood samples had been obtained from each individual. Each subject was given the Bernreuter Personality Inventory whereby a measure of neurotic tendency might be obtained. The investigation showed that biochemical determinations of the same blood constituent made at intervals of three weeks, do not correlate significantly because of the variability of the subjects. A correlation of +.41 P. E. 13 was found between neurotic tendencies and metabolic variability, confirming the findings of Hammett.²³ This would indicate that larger variations in the intermediary metabolism are apt to go along with neurotic responses to disturbing stimuli. It would seem, then, that the normal individual and the neurotic vary considerably within the normal range but the neurotic shows greater variability than does the normal.

McFarland and Barach⁴³ in 1935 using the Folin-Wu sugar and creatinine methods, the Bloor cholesterol method, the Youngburg phosphorus method and the Friedeman, Cotonio and Shaffer lactic acid method studied 52 male psychoneurotics (anxiety state, neurasthenia and anxiety hysteria) in the early stages of their disorder. The common symptoms characteristic of all the patients were those relating to fatigue and exhaustion. Forty normal male subjects of the same age, race, physical habitus and socio-economic status were

used as controls. Each subject came to the laboratory under basal condition once a week for four weeks. The first blood sample was taken at the end of a half hour rest period. The second sample was drawn at the end of each 1½ hour session in an oxygen chamber filled twice with air, once with 50 per cent O₂ and once with 10 per cent O₂. During the interval in the chamber the subjects were given cardiovascular and psychological tests.

The average blood findings for both groups were within the range of normal variation. The mean resting blood sugar level was lower in the patients (89 mg.) compared with the controls (97 mg.); the mean lactic acid higher (17.5 mg. compared with 15.7 mg.); and the mean calcium lower (9.7 mg. compared with 11.3 mg.). The mean differences between the phosphorus and creatinine were not significant. The individual and group variability of the patients from week to week was greater in each of the tests mentioned above with the exception of the creatinine. The average response of the patients to the variation in oxygen tensions, especially the 10 per cent O₂ was also more extreme; over half of the neurotics collapsed. There was a high correlation in the psychoneurotic group between the variability in the biochemical tests and (1) poor cardio-vascular reactions, (2) impairment in the psychological tests, and (3) frequency of neurotic complaints.

DISCUSSION.

It is well known that a marked alteration in any of the physicochemical variables such as temperature, sugar, water, oxygen or the various electrolytes, either artificially induced in normal subjects or in patients will bring about alterations in consciousness, *i. e.*, sensory, mental and emotional impairment. The biochemical findings in the psychoneuroses do not reveal extreme enough deviations or lack of deviations from the normal to account for the abnormalities in behavior. It is possible, however, that minor variations if chronic may be contributing factors; also lack of deviations under conditions which indicate impaired compensatory reactivity may be quite as significant as deviations.

Recent studies such as those of Cannon^{7, 8} emphasize the interdependence of the various physiological processes in the maintenance of "homeostasis" or the so-called "steady state" of the

fluid matrix. It appears to be the function of the sympatho-adrenal mechanism to preserve and assure a homeostatic condition in the internal environment, *i. e.*, maintain normality. In spite of the margin of safety physiologically and the great degree of adaptability psychologically every organism is subject to deterioration depending upon the intensity of the precipitating environmental stimuli (mental and emotional conflicts) and the individual susceptibility due to inheritance. Homeostasis is in great need of being re-done quantitatively.²⁹ In the neurotic the "loss of control" of behavior is intimately related to vegetative imbalance although it is difficult to determine its relation to somatic reactions such as palpitations, dilated pupils, digestive disturbances, shallow and rapid breathing, vertigo and profuse sweating. Behavior of this kind indicates that the sympatho-adrenal system is involved and further research in this direction may clarify the psycho-somatic relationships as well as the variability of these patients.

Kroetz³⁴ has brought forward experimental evidence favoring the conception of Hess²⁸ that the oxygen exchange between the alveolar air and blood is promoted by sympathetic and inhibited by vagus action. In neurotic patients showing vasomotor instability and "vegetative stigmatization" in whom a painless arterial puncture brought about pallor, sweating and some cyanosis (due to venous stasis) Kroetz found a decrease in arterial saturation to the average level of 88 per cent and a decrease in the oxygen tension equilibrium between the alveolar air and arterial blood of 6 to 31 mm. Hg. This finding, however, needs confirmation. The chronic fatigue so characteristic of most psychoneurotics, especially in neurasthenia, might become more intelligible in the light of careful studies of the blood gases. Haldane^{21, p. 139} observed during the war that in cases with general failure of nervous coordination as in "neurasthenia" fatigue and "shock," there was general nervous irritability, shallow breathing, fatigue of the respiratory center, exaggeration of circulatory reflexes, tendency to sweating and occasional instability of temperature. All of these symptoms seem to be due to what Hughlings Jackson called "release of control" so frequently encountered in the various mental disorders.²¹ Chronic emotional strains may tend to disturb the normal transportation of oxygen from the lungs to the blood with a consequent impairment of the nervous tissue. Even though the vascular oxy-

gen transport system (blood hemoglobin) whose efficiency is regulated by the arterial oxygen capacity and saturation and by the alveolar oxygen partial pressure is found to be normal in mental patients, there may be a loss of efficiency in the tissue oxygen transport system (myoglobin and part of the cytochrome complex) the efficiency of which is regulated by the blood flow, the state of the capillaries, etc. This system may be even more important for the central nervous function because it contains and transports the molecular oxygen which will be immediately utilized by the oxidizing enzymes, *i. e.*, the enzymes concerned with cellular respiration. Little is known, however, of the properties of this system.

Barcroft⁴ has indicated from his discussion of Claude Bernard's famous statement "the fixity of the internal environment is the condition of a free life" that the organism in gaining constancy of temperature, hydrogen-ion concentration, water, sugar, oxygen, etc., ultimately reached a stage of development so that man's higher faculties could develop. In almost every case of extreme variation in these organic constants the most striking effect is on the central nervous system. On the other hand recent research is tending to clarify the way in which ideas and emotions can upset these constants. The chemical and physical processes associated with mental and emotional processes are of an exceedingly delicate character and are apparently intimately interconnected. Processes (probably rhythmic) of such delicacy must surely require a medium of great constancy in which to attain an ordered development. As much attention, therefore, must be given to biochemical studies of the psychoneurotic in understanding the psychological abnormalities as to the way in which mental and emotional states influence the body chemistry.

Before it is possible to conclude what is abnormal in the blood chemistry of the psychoneurotic comprehensive studies should be made on large samples of normal human subjects of the day-to-day variation in all the common, measurable physiological constants, at several standard ages. As Hoskins²⁹ has pointed out, the so-called normal values given in physiological text-books are often based on inadequate sampling; for example, the mark on the clinical thermometer which tells how warm the human mouth ought to be was determined by an individual clinician upon himself and the traditional figure for urine output was determined on beer drinking

German students. Knowledge is especially inadequate relative to the extremes, *i. e.*, where the normal leaves off and where the pathological begins as well as the normal reactions to a given fixed stress, such as anoxemia, temperature variations, or a standard exercise. In the analyses of the biological reactions of psychoneurotics it appears that their failure to achieve compensations quickly and smoothly may be one of the most important aspects of their illness.

Von Bergman (*Functionelle Pathologie*, Springer, Berlin, 1932) has stressed the importance of environmental factors and mental and emotional behavior as basic in determining organ inadequacy. This may well apply to nervous and glandular dysfunction or, as von Bergman insists, although pathological changes cannot be demonstrated at autopsy they may exist in clinical observations in mal-adapted patients. A careful analysis of psychoneurotic and psychotic behavior from this point of view is greatly needed.

SUMMARY.

A survey of the biochemical work in this field reveals a confusion of results. The lack of agreement among investigators may result from any one or more of a variety of uncontrolled factors. Differences in psychiatric diagnosis, poor research technique, including inadequate sampling and the lack of adequate normal control groups, lack of refinement in the biochemical techniques as well as lack of precision in the biochemical technicians, inadequate standards to indicate where the normal leaves off and the pathological begins, and insufficient or inept statistical treatment of the obtained data have all been more or less influential in presenting distorted and unreliable biochemical pictures of the mental disorders. These factors are in some measure within the control of the experimenter.

Another factor over which the experimenter has no control and which is not a negligible one in explaining the variety and abundance of conflicting results is the variability of the psychoneurotic. The variability is uncontrolled and may yield high normal results one day and low normal results the next in the same individual. A vegetative and vasomotor instability is probably a more or less constant symptom of neurotic behavior. The variability of the results of chemical studies of the blood appears to reflect the in-

stability of the intermediary metabolism of the psychoneurotic. Hence the degree or kind of emotional stability may be a function of the amount of variability in the blood constituents. In the final analysis the variability of the psychoneurotic probably implies fatigue and over or under correction or loss of adaptability, which ultimately results in irritability, dysfunction and irreversibility of certain organic mechanisms.

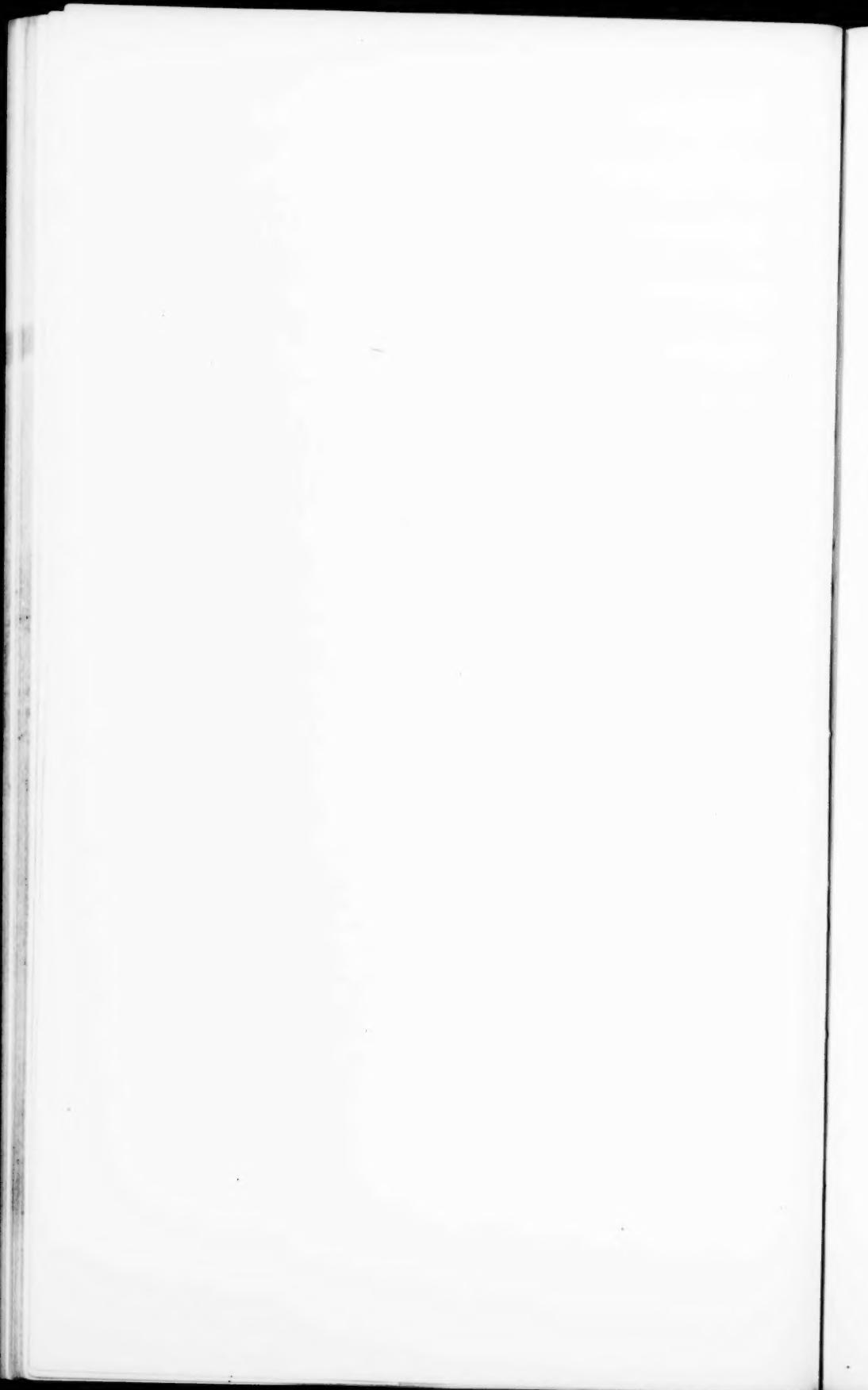
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A PSYCHIATRIC TECHNIQUE FOR THE EXAMINATION OF CRIMINALS.*

By LOWELL S. SELLING, M. D., PH. D.†

Until three decades ago little thought had been given to the problem of examining offenders. Previous to the early years of this century, psychiatry had little or no standing, and the problem of what to do with the insane person, who was brought before the court, was handled by alienists who were the forerunners of today's psychiatrists. With the development of the mental hygiene concept in psychiatry, and with the adoption of techniques and knowledge developed by other disciplines closely allied to psychiatry, an entirely new concept of criminological work with the insane and other mental deviates was developed. No longer was the purpose merely determination of sanity or insanity but was, instead, one which now offers promise of a possibility of treating that social disorder known as crime.

It must be admitted that many clinics even today consider themselves constituted only to inform the court whether the offender is susceptible to punishment or should be excused by virtue of the fact that he is insane. The purpose of the court clinic and, to a similar extent, the prison psychiatric clinic is so to examine the offender that the elements of his personality are disclosed, and by virtue of the fact that this information is in the hands of a scientific group who can interpret it, present the findings to the judge so that he may provide in his sentence some form of treatment or control rather than punishment. Certain recurrent facts about crime are rehashed every time there is a crime commission meeting, every time there is a conference of those who have to deal with the problem, and every time criminologists meet in a national convention of any sort. These ideas seem to be: (1) Proper provision for giving the early delinquent something in the way of recreation

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and home training should do something to cut down crime; (2) The prisons do not act as deterrents; and (3) Psychiatric and other administrative bodies having to deal with crime should be removed from political influence. It is the second factor with which we are most interested here. The aim of a court clinic being to provide as much knowledge of the individual's make-up as possible, it is necessary to glance over the techniques and procedures which have in times past been developed for the examination of various types of mental cases and to evaluate them in terms of the newer idea to obtain as complete as possible understanding of emotions, of background, of personality make-up violators, and the application of the findings disclosed by these examinations to legal procedures as they are seen today.

In the last years of the third decade of the present century, there was much to do about this attitude in treating the problem of crime. Persons as important as then Governor Alfred E. Smith proposed a commission on which, among others, some psychiatrists were to sit, who would dispose of the case of a convicted criminal. In other words, the determination of the facts forming a decision whether a law had been violated would be distinctly the problem of the jurists involved in the case. After this decision had been made, the disposition of the case would be in the hands of the commission or committee who would be particularly skilled in handling the personality problem involved. If it were the decision of such a committee or commission that the man was hopeless as far as psychiatric knowledge of treatment of his case was concerned, he would have to be incarcerated for a long period of time merely to control him. On the other hand, it might be possible for the psychiatrists on such a body to show how psychiatric treatment outside of an institution might make this man law abiding and at the same time protect society against any future depredations. We must not forget that in the problem of dealing with a convicted man we are faced, first of all, with the fact that any treatment that he gets when withdrawn from the community where he might be self-supporting is an expense to the taxpayers and to the state; and second, incarcerative treatment in the past has proved not to be productive of success but rather to make the man antagonistic and more antisocial.

We must not forget that sooner or later every convicted felon or misdemeanant does return to society, and it should be ludicrous to return this man to society in a bad mood, in a bad state of mind, if this could be prevented. Naturally, since the writer is working in a court clinic, he is more impressed with the preventive work that can be done in such a clinic than he is with preventive work which can be done in the prison. A great deal of it will depend upon the attitude of the judges. In our clinic, we do not feel that it is any longer necessary to show the judges what we are trying to do. They have good insight and at times show almost a remarkably uncanny knowledge of what cases can most profitably be sent to the clinic, and in what cases the clinic's suggestions are in keeping with the legal requirements of the offense. In other words, while the clinic tried to give both a practical and an idealistic recommendation to its judges, many times the law prevents the carrying out of an idealistic suggestion, and it is here that the judge still must overrule the clinic's suggestion.

With the idea in mind, then, of doing therapeusis and prevention rather than merely making a decision as to sanity, the situation must be reviewed as regards the examination procedure. It is obvious that psychoanalysis, which may very well be the method of choice of examination, cannot be used in the clinic situation. First of all, it is imperative that the sentence be passed as soon as possible after conviction. In some cases it would work a distinct hardship to keep a man in jail while awaiting thorough psychoanalytic examination, for the time required to examine him and possibly to give him the therapy to make him harmless might be much longer than the sentence which could be imposed for his offense. We find this to be particularly true in the case of sex offenders. The second point is that, since no delay is permissible before sentence, there is very little chance even to make a favorable analytic approach. The third point is that many offenders would not submit to analysis and would not be good material for analysis for a number of reasons, the most important of which are that there are feeble-minded persons who cannot but be uncooperative and many antisocial persons who are unwilling to submit to even a minimum examination. The procedure of psychoanalysis is not easily understood by the layman and it is my feeling that it would

be almost impossible to convince most potential criminal patients that analysis would be the thing for them.

Many of the above arguments are, of course, vitiated in the prison clinic or in some place where the offender can be examined over a period of time and rapport established, but under usual court-clinic circumstances all of the above objections are valid. Because of the fact that it is difficult to obtain a personnel who can carry this out, an abbreviated analytic procedure which probably would not be accepted by an orthodox analyst is about the best that can be done, and even this has to be handled with what the Germans call *verstandt*.

After going over the techniques available for a clinic of the sort which we have in Detroit, I have found that there are two approaches to the offender. Naturally, these would be handled differently, applied differently, and used in different proportions with different violators. A short interview to get his attitude toward the clinic and to get the offender to reveal some of the more superficial personality features which might have bearing on the techniques to be used is, I have found, a very good way of commencing the examination. It must not be forgotten that for the most part the offenders whom we see would appear to the layman to be absolutely normal. In presentation, in speech, in attitude, the casual observer can see little deviation. It is true that judges who have had a great deal of experience on the bench, in studying and analyzing persons of this sort, develop an unconscious insight into what personality features are behind the person's behavior, but since they have no real scientific way of judging they are more apt to be incorrect in their judgment than a scientific clinic. It is, however, true that able judges demand from a clinic a standard of examination and standard of judgment which is very high because of the fact that they themselves can see when the clinic makes a mistake. For that reason, when a clinic is not operating at a maximum efficiency, the wise old judge is skeptical of its value to a very great extent. To handle this problem, it is necessary to investigate techniques even more closely so as to be sure that whatever is humanly possible will be done in revealing to these judges the social and mental nature of the offender.

There are two techniques of interviewing which are definitely usable with the offender. It has always been my idea that the psy-

chiatrist and psychologist who are dealing with criminals should have a special training because the approach is so different. In the case of the ordinary neurotic or case coming to the practicing psychiatrist, one expects a certain amount of cooperation from the patient and a desire to get help. In the case of the psychotic, at least the family is usually willing to help, but in the case of the criminal, few people are willing to help in establishing rapport. If the offender does not like the examiner, he is apt not to give the information which should be forthcoming in order to make a proper evaluation of his case. This is particularly true if the examiner is injudicious enough to ask direct or specific questions as to the presence or absence of hallucinations or delusions. It often happens that such questioning creates a contemptuous attitude. An offense involving personal conflicts may also give coloring to attitudes, a point to be recognized in establishing cooperation. In our clinic this is found to be important for we get a number of assault and battery cases involving domestic relationship. In cases of this sort that part of the examination written by the patient is, in my opinion, more reliable since it removes the examiner's personality from the interview. It is quite possible to get the offender to do his very best on written psychological tests and by this method also it is occasionally possible to get a complete life history including details of value that cannot be obtained by the examiner even by diligent questioning.

In our clinic the spontaneous verbal life history has been too infrequently obtained. We do not think this is due to antipathy toward the clinic but rather to the fact that it is a well known idea among the offenders that the less they say the better. In addition, it has never occurred to the offender that his past life is of any importance. He may talk freely about his offense, but to tell about the circumstances surrounding his childhood, and to give any other information of that sort which is so often valuable, seems to be impossible. He will refuse to give this information because it seems irrelevant and, if he does give any of it, it is seldom of much value for the reason that he does not know what the examiner would need in order to stress important points in the etiology and development of the mechanisms behind his offense. In the cases of, particularly, the utterers and publishers, it is found that a long detailed and embellished life story is relatively easy to obtain. These

people seem only too anxious to tell everything about their lives but seldom is it truthful and less frequently is it worth anything. The real developmental mechanism is beyond the insight of the offender, and it is necessary to do some plugging and to make an examination to get anything of much value.

In order, therefore, to remove the personal equation, it has been customary to introduce three types of tests: (1) The group intelligence test or the self-administering intelligence test; (2) the neurotic inventory which, as a single unit, is not worth much, but if one goes over the answers to individual questions is worth a great deal; and (3) one of any of those tests standardized by the psychologist to test "special abilities or traits." Here often reactions and individual responses are extremely valuable.

For many years it has been the clinic's policy to give the Stanford-Binet. This has, in a way, aided the psychologist in estimating the patient's character, and this was important for the reason that the psychologist often took the social history. But a false reaction occasionally appears in just this sort of situation. First of all, a feeling of defeat may be set up in the patient after he has failed a few of the psychological tests which will result in lowering his ability to go through with the success that he is actually able to obtain. Second, he becomes defensive with the examiner so that if the history is taken by the same person, he minimizes and is very careful about what he says. The third criticism, which is not so much directed against the Stanford Scale as against the Performance Scale, is the utter silliness of the whole business from the subject's standpoint. A man who has been self-supporting for years is asked to play with blocks and with form boards and we often get complaints and a sense of irritation and a desire no longer to cooperate with the clinic even as much as he has. Therefore, it has proved better to use paper tests whenever possible and if these seem low, to check with the individual tests.

It has been my idea that the individual psychological test could be given after the psychiatric examination, even though the psychiatrist might want to know what the man's psychological rating was, because very often rapport is lost by this particular silly technique. I do not want to be quoted as saying the psychological tests are not good. What I mean to bring out here is that the group tests and self-administering tests in the case of criminals where

the whole situation has been carefully outlined, and where they could be applied, would be fairer and probably would establish a better rapport.

The second written technique with which I have been quite impressed, is that of getting an autobiography. Of course the best autobiographies are obtained in an institution from patients who have a lot of confidence in the examiner. It is difficult to get the patient to write an autobiography after a first interview, although occasionally we have had this done. Too often the patient does not remain in jail long enough so that the autobiography will be available to the examiner before a report to the judge has to be turned in.

For several years now, the writer has been making use of personal life histories and has collected many hundreds. Some of these are only a page or so in length, others are longer. Nevertheless, the value, even of the short ones, cannot be denied. The material is there in an objective form and can be compared with police records, with statements which the patient has made, or with the evidence presented in court, and in a few cases the autobiographical material has been such that when checked, the psychiatrist has been able to give the court an opinion that resulted in a new trial. This was true in the case of a paroled man arrested in an automobile with two other hardened criminals. He had been out of a penitentiary about nine months and was making a good adjustment when these two acquaintances of his picked him up and were driving him around town. The police arrested them when they violated a traffic ordinance and a gun was found in the car. This meant that our patient would be sent to a penitentiary to serve out the remainder of his sentence, a matter of some five or six years. When we checked his autobiography we found that he had only a casual acquaintanceship with the other men, his story was straight-forward, and the whole matter was cohesive. During the psychiatric interview he did not give us the impression that he was telling the truth, and, if we had depended upon that alone, he probably would have been removed from society. As it is, he has now made a good adjustment for over a year, his case having been reversed when it came up for a new trial. He was released as not guilty.

For the psychiatric interview itself, we have found it necessary to devise new means of questioning. As those of you who are acquainted with criminological procedure are well aware, the person who does not have delusions or hallucinations and who is aware of the fact that he is being examined in a psychiatric clinic, is apt to take offense or to laugh at the routine questions which might be asked without getting an adverse reaction from state hospital inmates. Such questions as: "Who are these people who are making trouble for you?" or "Has anybody tried to poison you?", while probably not good technique, seem to be fairly acceptable in the state hospital situation because they evoke a direct answer revealing the evidence of psychosis. In the criminological examination, however, this is not the case. Often we say, "Has anybody tried to kill you?" and the answer is "Why should anybody?" Yet a latent non-psychotic hallucinosis, which many offenders have, must be elicited. A few special techniques to get this material might be described here. One of them is the technique of evaluating religious experience. The examiner has found it a good idea to discuss church matters in general, giving the patient the idea that his church-going has something to do with his conduct. This is particularly useful in a patient who claims that he wants to reform and wants every aid in keeping out of further trouble. The examiner then asks what church he has belonged to, his attendance, and gets him to describe various types of religious experiences that he has had. Without going into too much detail and exposing his reason for trying to get this information, the examiner will gradually lead up to the fact that certain people have religious experiences and are really religious and ask the patient whether he has had any experiences that might be different from those that other people have, such as hearing angels' voices or direct messages from God. It has been our experience that even in such a fashion as this we have been able to get, particularly from negroes, a type of hallucination which would not be elicited by direct questioning. Many negroes do hear something that they call God's voice. They say that it is not like an external voice but is within them and, by close questioning, we find that, in many cases, it is mere superstitious thinking. This type of reaction could not be elicited by direct questioning.

Another feature of the examination, which we might describe here, is the eliciting of infantile fixation material. Inasmuch as most laymen, and therefore most offenders, do not realize the significance of the father and mother attachment, direct questioning about the early home adjustment rarely reveals anything of significance. Questions such as "How did you and your mother get along?" or "How did you and your father get along?" usually evoke the answer "Oh, all right" or "Just the same as other people get along with their folks." Nevertheless, this material can be obtained by such techniques as are often used in child guidance clinics and which are very familiar to those who are doing mental hygiene work. These techniques are: getting the patient to describe his reaction to punishment on the part of either the father or the mother; also to get him to tell his fears and feelings when bringing home bad marks, if there were any. If he can be led on to describe his early juvenile record, and what his parents' reactions were to his early offenses, one can often elicit the fact that there was a failure to respond emotionally on the part of one or both parents, and a keen desire on the part of the patient to get the parent to ally herself or himself with him, emotionally. The more questioning that one can do indirectly about experiences rather than ideas, the better seems to be the response in the matter of examining the criminal.

We have found a great deal of difficulty also in getting rapport in the matter of determining the mood of the prisoner. Even one who has the marks of a chronic depression on his face cannot be made to admit that he is worrying over what is going to happen to his case. The technique which we have found to be of some value, but still leaves something to be desired, is to get the patient to try to remember or write down his thoughts during a previous evening when he is in his cell. This is a matter that has to be handled with great care because, if the patient thinks that he is being made to put himself in jeopardy, he will reject the whole psychiatric program. We do not use this method with great frequency but in a few cases where the patient looks obviously worried, we have asked him on one day to try to remember his thoughts for that evening and to report them to the psychiatrist on the next. We have had some degree of success with this.

Another technique which is very frequently used in ordinary psychiatric examinations, but not acceptable in criminology, is the repetition of questions beginning with "why." For instance, the subject expresses paranoid ideas and the examiner says, "Why do you think so? Why should these people make trouble for you? Why do they pick on you?" and other questions of similar ilk. With the offender this is almost impossible. After the first or second "why," he develops the idea that the examiner is trying to make fun of him or at least to "get something" on him.

It is well, therefore, to use a roundabout method of examining, even using leading questions, although they are barred in most good psychiatric usage and certainly in legal usage. One has to be careful in the use of leading questions or making a hypothetical question that he does not make it too easy for the offender to answer. For instance, in a case which we had, the present writer drew out a long hypothetical question asking the patient whether he did not commit his crime in the manner which was described in this question. As a matter of fact, the way the examiner phrased the question made the offense much less significant and would have made it possible for the offender to have accepted a lesser plea had it been true and had the man not already been convicted, so he readily acquiesced. The theoretical solution of the crime which the examiner had built up from the few questions, which the patient had been willing to answer, was entirely fallacious and was only corrected by checking against the police reports and having another interview with the man.

Sex offenders are the hardest to examine. In a clinic where there are only one or two contacts and where the examination must be completed in a few hours or a few days, there is, of course, a tendency to try to get information out of the offender before he is well integrated with the examiner. This must be very definitely guarded against because it will lead to misinformation if the patient talks at all and may even make him shut up like a clam. It has been our experience that unless a lot of care is taken, and lot of salesmanship is used on the offender, a sex offender will seldom give enough information to enable one to obtain a real understanding of his case. Of course it is not necessary in a clinic like ours to get a confession except insofar that it aids in making a decision and pointing out modes of treatment, but it is well for the examiner

to try to get some sort of a picture of what passes through the sex offender's head at the time that he commits the crime, and why he behaved in the way that he did, if he can give any explanation.

At a rough guess one would say that about 85 per cent of sex offenders at the beginning of the examination deny categorically that they have committed the crime of which they are convicted. Even when confronted with carefully chosen evidence—evidence which seems to be beyond reasonable doubt—they will continue their denial for fear that something grave will happen to them. This is naturally to be expected because of the tremendous odium that the public placed upon the sex offender. The technique which we use, therefore, is somewhat of a police technique and it seems to be useful when there is a certain objective evidence available which can be used to contradict the patient's statements. Without being aggressive, without being commanding, without telling him that a confession is desired, the man is asked to tell how it was that he was arrested. The examiner assumes that he was telling the truth and tells him so. He then asks him to explain certain discrepancies in the testimony which the examiner already has at hand. For instance, he may say that he was not anywhere in the neighborhood and the examiner may show that he was identified by several people. The examiner can show him by hypothetical cases and by discussion of other factors in the examination, how it would be to the man's interest to give the clinic a straight story. I have always disapproved of threatening offenders because that usually makes them negativistic and, of course, the clinic is in no position to offer any promises that the judge will not sentence him to a maximum term. Under these conditions, a general discussion on the subject of sex is better than an attempt to get him to make certain admissions. As a general rule, with sex misdemeanants, it is possible, by making the man accept reality and face reality and showing him that nothing drastic is likely to be forthcoming, to get his story. Here, we are particularly interested in regard to the fantasies which might make him a difficult case to handle or might make him a more promising case to handle under psychiatric care. To sum up, therefore, I would point out that the criminological clinic needs to develop different techniques from other psychiatric clinics because it is not to the interest of the offender to talk freely. It is necessary, too, for the examiner to know the nature of the

man in order to use therapy rather than punishment. There are various parts of the routine psychiatric examination which are contraindicated unless modified. The personal interview can be curtailed and material obtained in written form, thus removing certain personality factors on the part of the examiner. Second, delusional material is often not forthcoming because the patient usually has too much insight not to resent questioning which points to insanity. Third, family history material must be gotten with great care. Fourth, it may be necessary to use mild police methods, not, of course, third degree methods, but police questioning methods in order to break down the sex offender to see whether he is a worthy case for psychiatric treatment. This type of discussion and material can be carried out to a great extent. I have only here given a few samples of the new techniques which we have found necessary to adopt in our clinic.

THE AGE-INCIDENCE PRINCIPLE OF INVESTIGATION IN EVALUATING THE BIOLOGICAL SIGNIFICANCE OF INHERITED VARIATIONS IN THE PROBLEMS OF HUMAN CONSTITUTION.

I. THE TYPES OF SCAPULÆ.*

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Inherited variations may be defined as inherited differences, similarities and inequalities of structure and function common to the individuals of any species. Those discernible in man, which remain permanent or relatively so, after type differentiation, disclose his genetic origin, preserve individual identity and enable one to distinguish one person, one family, one stock from another. In these directions, inherited variations are accorded universal recognition, but only meager consideration is given them in the problems of human fitness or constitution. Inherited variations are the very foundations of human constitution—*the product of inheritance as modified for good or ill by environment*. Inherited variations render individuals A and B forever unequal in capacities for adaptation.

Inherited variations disclose both *quantity* and *quality*, but the problems of human fitness or constitution, whether of the individual, the family, the group or the stock, deal with *quality*, rather than *quantity*. *Quantity* can never be a dependable measure of *quality* in living things. Quantitative methods, based as they are either on measurements of man in the mass, or on body build or both, have signally failed to yield dependable approaches to the problems of human fitness or constitution. Quantitative methods deal essentially with *quantities*—dimension, volume, size, bulk, robusticity; whereas, the problems of fitness or constitution deal essentially with *qualities*—capacities (good, fair, poor) for performance, adaptation, survival; therefore the approaches to these

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problems should be based on *qualitative* rather than *quantitative* methods.

Qualitative methods of evaluating the biological significance of inherited variations in the problems of human fitness or constitution, whether of the individual, the family, the group or the stock, can be made available: (1) by simplified classifications of inherited variations (whether of structure, function, measurements or indices) into readily recognizable types; (2) by determining, through adequate family studies, the manner and frequency in transmission of variation types in relation to stock and sex; (3) by investigating the periods of variation-type differentiation incident to "normal" and altered processes of growth and development; (4) by investigating the permanence and possible modification of variation types after their differentiation in relation to nutrition, growth, development, disease, occupation and various environmental influences; (5) by the application of "the age-incidence principle" in evaluating the biological significance in relation to age of those variation types which are found to remain permanent, or relatively so, after their differentiation; (6) by comparative investigations of variation-type frequencies on "healthy" and "sick" groups in similar age periods; and (7) when possible, by comparative investigations of variation-type frequencies on the living and the dead in similar age periods. The types of human scapulae are the only inherited variations which have been investigated in all of the foregoing directions and used as approaches to the problems of human fitness or constitution.

Observations on a family in 1906 led me to classify the scapulae of man and some other mammals into convex and scaphoid (straight, concave and mixed) types; and subsequent investigations have disclosed unusual biological significance of these types. It is my purpose here: (1) to point out the bases for scapular classification in man and some other mammals; (2) to summarize some of the results of my investigations, based on the types of scapulae, and (3) to point out a new principle—the age-incidence principle of investigation—whereby the biological and clinical significance of non-sex-linked, simply-classifiable, readily-discriminable, frequently-transmitted and permanent or relatively permanent types of inherited variations can be qualitatively evaluated, and thus made useful in the problems of human fitness or constitution.

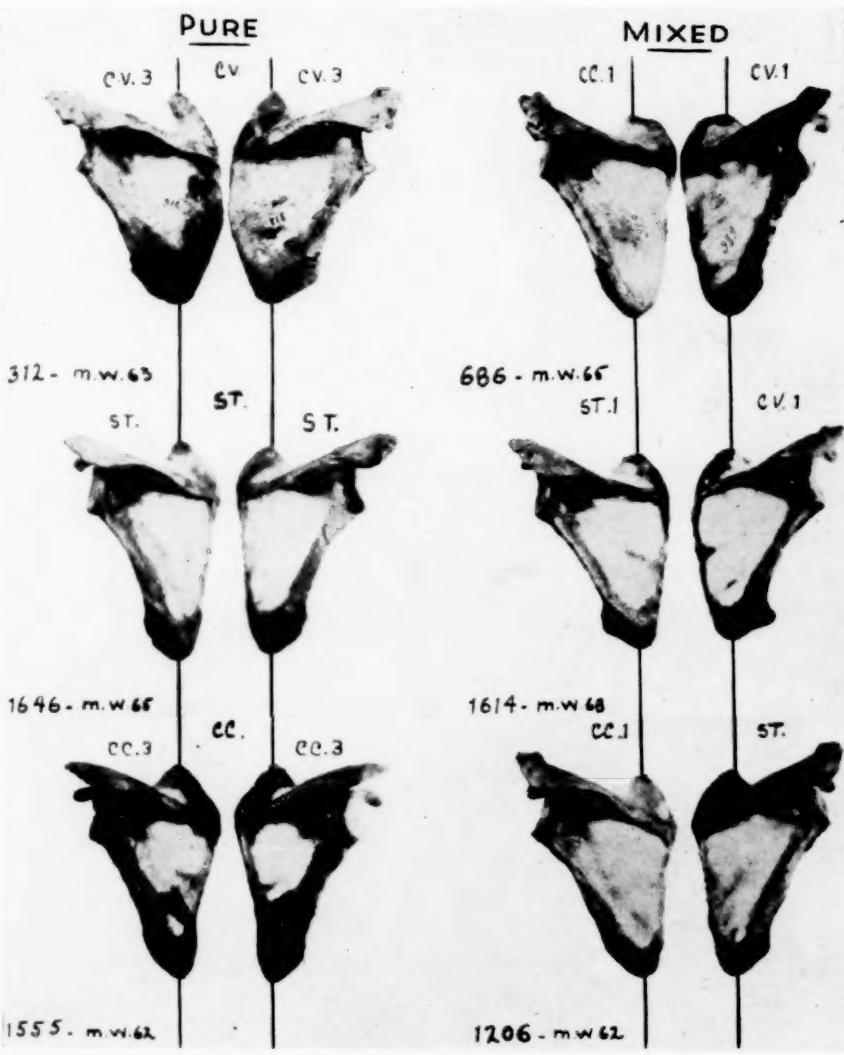
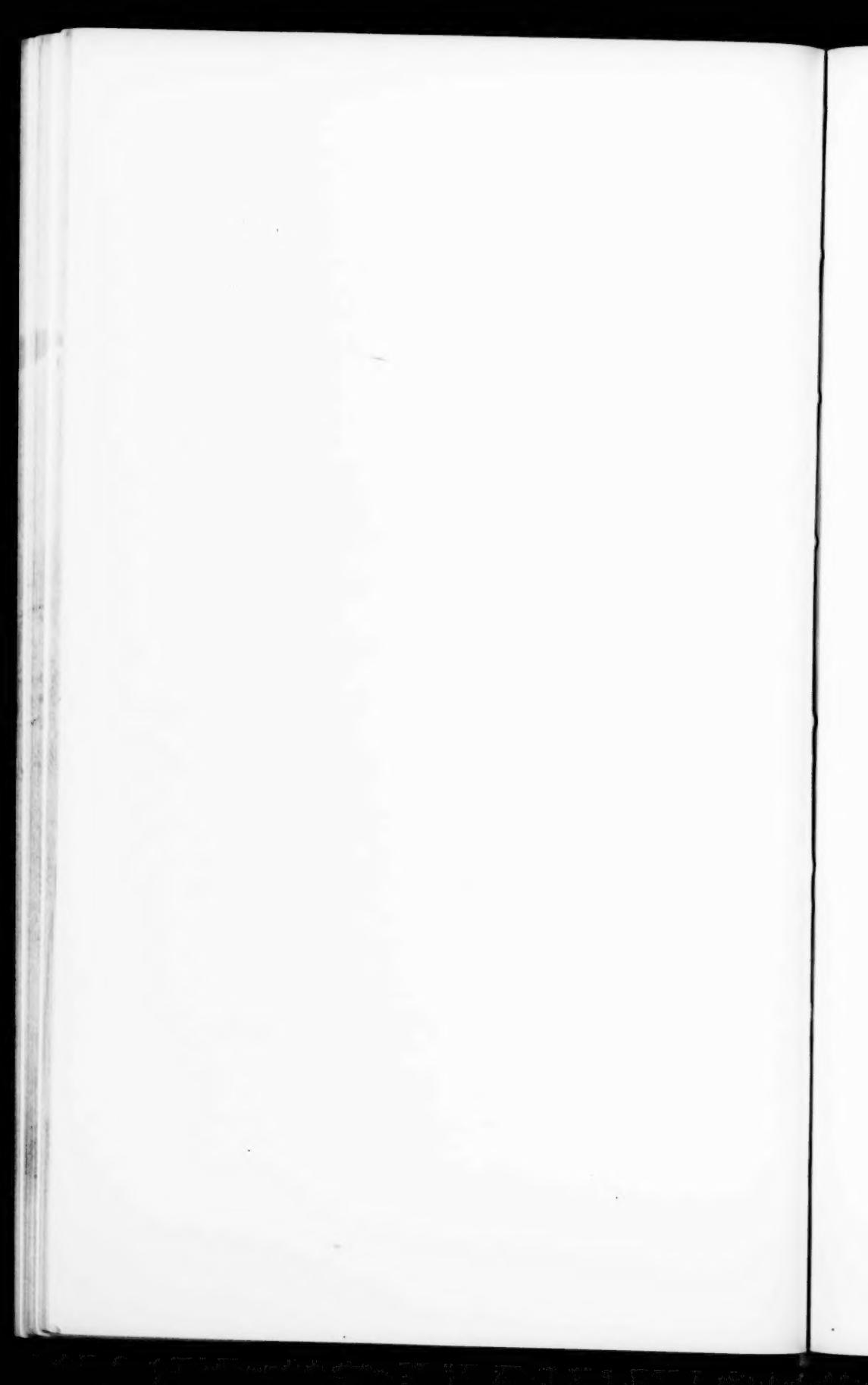


FIG. 1.—From photographs of six pairs of scapulae from white males in the age period 60-69, dissecting-room material, Laboratory of Anatomy, Western Reserve University Medical School, Cleveland, Ohio.

The three pairs on the left (convex, straight and concave types) in the order named from top to bottom are "pure" types, *i.e.*, each bone of each pair is of the same type. The three pairs on the right are "mixed" (scaphoid) types (concave + convex, straight + convex, concave + straight) in the order named from top to bottom.



BASES FOR SCAPULAR CLASSIFICATION.

Classification is based primarily on the character of the greater portion of the vertebral-border contour below the scapular spine in its relation to a straight line. The classification begins at the base of the scapular spine and ends at the inferior-angle region. If all, or more than one-half (practically the upper, middle or lower two-thirds) of this part of the bone is uniformly or irregularly, slightly, moderately or markedly convex or concave, or straight or nearly so, tending rather to concavity than to convexity, the bone is so classified. Comparative studies of the 50 or more morphological and architectural characters, peculiar to human scapulae, show that 12 or more of these are similar in the straight and concave types; hence I have given them and the *mixed* types a common name—*scaphoid*. Moreover, the bearers of the scaphoid (straight, concave and mixed) types often show similar general characteristics. When paired scapulae differ in type, they are called *mixed* scaphoids. Paired scapulae may also differ in the degree of convexity or concavity, for instance, a person may have a Cv1 on one side and a Cv2 or Cv3 on the other, or a Cc1 on one side and a Cc2 on the other. Mixed (scaphoid) types occur in white stocks in approximately the following percentages:

Convex + straight	10 to 15 per cent
Straight + concave	3 to 5 per cent
Convex + concave	1 to 2 per cent

Fig. 1 illustrates the six combinations of paired scapulae and the following outline indicates the classification of single and paired scapulae and useful symbols in recording them:

CLASSIFICATION OF SINGLE SCAPULÆ.	CLASSIFICATION OF PAIRED SCAPULÆ.		
Convex types (Cv1, Cv2, Cv3)	Convex	+ Convex	= Pure convex types
Straight types (St) Concave types (Cc1, Cc2, Cc3)	Straight (St)	+ Straight (St)	Pure
	Concave	+ Concave	scaphoid
	(Cc1, Cc2, Cc3)	(Cc1, Cc2, Cc3)	types
	Convex	+ Straight (St)	
	(Cv1, Cv2, Cv3)		
	Straight (St)	+ Concave	Mixed
		(Cc1, Cc2, Cc3)	scaphoid
	Convex	+ Concave	types
	(Cv1, Cv2, Cv3)	(Cc1, Cc2, Cc3)	

SUMMARY OF INVESTIGATIONS AND RESULTS.

Having observed in 1907 that *scaphoid* scapular types appeared to predominate in the young and *convex* types in the old, I was led to investigate the origin, distribution, frequency and permanence of scapular types in man and other mammals, as well as their possible bearing on the problems of human fitness or constitution. These investigations have shown: (1) that in man the range in variation of scapular types is from the extremely *convex* through the *straight* to the extremely *concave*; (2) that their origin in man and other mammals is primal; (3) that in man they are equally distributed to the sexes and are transmitted with unusual constancy—the *scaphoid* (*straight*, *concave* and *mixed*) types as dominants; (4) that monovular twins disclose similar scapular types; (5) that all scapular types are differentiated in man in prenatal life; (6) that they remain permanent in type in man throughout his life span, regardless of ageing processes, nutrition, health, disease, injury, occupation and other environmental influences; (7) that they are found in varying percentages in the remains of ancient and modern man and of some other mammals (gorilla, orang, chimpanzee, lemur, bat, armadillo, *et al.*); (8) that they are present in varying percentages in the excellently, well and poorly adaptable, regardless of sex, age, race, stock, body build or social level; (9) that in similar age periods, they may be present in varying percentages in different communities of the same race or stock; (10) that investigations of comparable numbers of the *living* and the *dead* (White and Negro stocks) in successive age periods (20-80+ years) show a relative percentage *decrease* of the *convex* types and a relative percentage *increase* of the *scaphoid* types in the *dead*; and (11) that investigations of healthy and sick groups, representing successive age periods from childhood to old age, show that the percentages of *convex* types *increase*, while those of *scaphoid* types *decrease*. My more recent figures¹⁴ on the healthy and the relatively healthy (White stocks) in successive age periods show an approximate reversal in the percentages of *convex* and *scaphoid* types from childhood to old age.

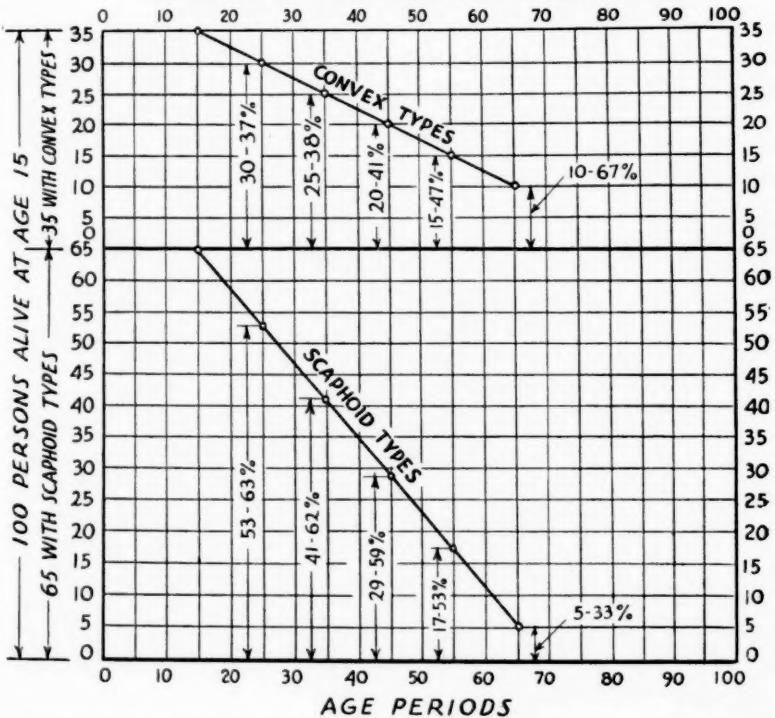
THE AGE INCIDENCE OF SCAPULAR TYPES
(WHITE STOCKS).

6 to 15 years.....	Convex types 35 per cent
	Scaphoid types 65 per cent
65 years and over.....	Convex types 65 per cent
	Scaphoid types 35 per cent

COMMENT.

Since adequate investigations in various directions, including follow-up, lead to the conclusion that scapular types remain permanent (unchanged) throughout the life span, the only remaining

THE AGE INCIDENCE OF SCAPULAR TYPES
APPROXIMATE RELATIVE PERCENTAGES



GRAPH 1.—Portrays the approximate relative percentages of *convex* and *scaphoid* types of scapulae in successive age periods from 15 to 65 years. It serves to explain the age incidence of these types by the selective death rate, as this is expressed in the known relation of heredity to longevity.

explanation for their age incidence is: *better adaptability, less morbidity, less mortality and greater longevity* among the bearers of the *convex* than among the bearers of the *scaphoid* types. This explanation is supported by my figures and by those of others in a recent publication,¹⁴ showing that in healthy groups of White stocks (grammar school and high school and university students and returned-over-seas men) and in sick groups (feeble-minded, insane, prison and tuberculous) studied in similar age periods, there may be approximately from $1\frac{1}{4}$ to $2\frac{1}{4}$ times as many convex scapular types in healthy as in sick groups. Moreover, recent investigations,¹⁴ based on my studies of public school pupils (White and Negro stocks) and university students (White stocks) in relation to grades attained, show, with but one exception,¹⁴ that the *higher* the grade, the *larger* the percentage of *convex* types.

THE AGE-INCIDENCE PRINCIPLE OF INVESTIGATION.

The age incidence of a number of diseases (constitutional psychoses, poliomyelitis, tuberculosis, cancer, *et al.*) has long been known, but the age incidence of the types of any inherited character was not known prior to my classification of human scapulae and its application to the studies of *healthy*, *sick* and *dead* groups in successive age periods. These studies revealed the age incidence of scapular types and further studies in explanation of this singular finding disclosed the *age-incidence principle of investigation*—a never-before-recognized principle, applicable to the qualitative evaluation of the biological significance of the permanent, or relatively permanent, types of inherited characters, whether of structure, function, measurements or indices. This principle is firmly grounded in the known relation of heredity to longevity, a relation now universally recognized and long utilized by physicians in the family history and by actuaries in life insurance. Pearl²¹ states that, "a mathematical discussion indicates that from one-half to three-fourths of the death rate is determined by hereditary factors. Just in proportion as heredity determined the death rate, so is the mortality selective." The age-incidence principle of investigation is applied by finding the frequencies of permanent, or relatively permanent, inherited variation types on adequate and comparable numbers of the relatively young and old or of two or more succes-

sive age periods after type differentiation or maturity. By the aid of this principle, the biological significance of the types of those inherited characters, whether of structure, function, measurements or indices which remain permanent, or relatively so, throughout the life span after type differentiation or maturity, can be qualitatively evaluated and the results expressed in zero (0), plus (+) or minus (-) survival values. Those variation-type frequencies which remain practically *unchanged* in relation to age indicate (0); those which definitely *increase* indicate (+) and those which definitely *decrease* indicate (-) survival values, as measured by the *age-incidence principle of investigation*. The qualitative evaluation of scapular types by this principle revealed plus (+) for the *convex* and minus (-) survival values for the *scaphoid* types.

Inferences.—The results of investigations, derived from the application of *scapular classification* and the *age-incidence principle* to studies of *healthy*, *sick* and *dead* groups, justify the reasonable inferences: (1) that two groups can be segregated in any community of any people: *Group A*—The bearers of the convex scapular types, among whom will be found the larger number of the better adaptable, the more disease resistant, the plus-potentially healthy, the longer lived; *Group B*—The bearers of the scaphoid scapular types, among whom will be found the larger number of the less adaptable, the less disease resistant, the plus-potentially sick, the shorter lived; and (2) that similar investigations of other non-sex-limited, readily-discernible, simply-classifiable, frequently-transmitted and permanent, or relatively permanent, types of inherited characters will yield similar results from some of them, applicable to the vital and enduring problems of human fitness or constitution, as these are expressed in inherited predisposition to health or disease and in inherited capacities for education, duration of life and adaptability in general.

CONCLUSIONS.

Simplified classification of inherited characters into recognizable types in the living and the application of the *age-incidence principle* in qualitatively evaluating their biological significance are new and dependable approaches to the problems of human fitness or constitution. In the prosecution of these problems, equal consideration

must be given to the ever-present factors—*inheritance* and *environment*. But this cannot be done, unless inherited characters are recognized, simply classified and qualitatively evaluated in studies of human fitness or constitution, whether of the individual, the family, the group or the stock.

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DISCUSSION.

DR. HARRY R. REYNOLDS (Gulfport, Miss.).—Dr. Graves has demonstrated, on the basis of extensive work which we have seen in the anteroom, his method of checking up biological fitness, and as he says, "survival value."

It is interesting to inquire whether the same inch measure can be applied to survival in mental stability, based on scaphoid scapulae. I believe Dr. Graves has referred to known age incidences in psychoses, as well as general conditions.

I think if we look over the tables of age at the time of admission to our hospitals, we would find, as Dr. Cheney said, the ages lower now than formerly, for which he gave the reason that better education on the part of the public was one factor in bringing them into the hospital earlier. Another factor, also, is probably something on the economic line. In the older days, most of the relatives or parents of the insane individual who was placed in the old insane asylum, were required, if financially able, to pay at least part of their keep, their board. Nowadays, in most cases, that burden is thrown on the county, through taxes, the county of residence of the individual. Therefore, people are more willing to give up their people to institutional care, and as mentioned before, they have realized the advantage of early treatment.

I think the remarks attributed to Dr. Alexis Carrell, in which he advocates the segregation of master minds, in some super institution, to ponder over all the known facts of arts and sciences at the present time and evolve from that some method or procedure of utilization of those facts for our benefit, might apply in this case. It might be well if some of those master minds could be given advantage of Dr. Graves' method of checking, not to check on his work, but to find if there are other indices of survival, because every individual line of research has its own fascination, and we cannot arrive at a final summation of the value of these things, probably for a great many years to come, until many more researchers have done their work.

DR. ABRAHAM MYERSON (Boston, Mass.).—Mr. Chairman, I have been a student of Dr. Graves for a great many years, and regard myself as his pupil.

I do not think that Dr. Graves has given you even a fraction of an idea of the tremendous work, the incredible effort, the superhuman patience, which has resulted in this short paper of this afternoon.

When I was his house officer, further back than either of us care to remember, he was then in the early throes of the study of scaphoid scapulae, and for years I studied scaphoid scapulae, following his example.

Since then, from time to time, he has given up his practice, dug in the graves of prehistoric peoples, examined the skeletons in anatomical museums all over the world; studied armadillos, elephants, bats, lizards; every conceivable thing, studied them wherever he found them. I do not know a piece of work in the whole history of science in which a man has consecrated his energies and his efforts, with such exemplary devotion, to one thing, the pursuit of truth, as exemplified in the study of scaphoid scapulae, by one, William Washington Graves, whom I am proud to call my teacher.

It seems incredible that the difference between a curved line or a concave line, will measure the survival ability of a group of individuals. The age-incidence principle is one of those happy formulations which a man of genius finds; namely, if a character, which remains unchanged during life, is found more among the young than it is among the old, it means that the young with that type of scapulae die before the other types do; and conversely, if the convex scapula is found more among the old than among the young, and remains unchanged throughout life, it means that people with convex scapulae will live longer.

Dr. Graves is rising above self, in making these studies. I examined his scapulae and found them concave, and he examined mine and found them straight, so he ought not to die early and I ought to die early.

If you study all manner of living things, as he has done, you will find the incontestable fact that people with scaphoid scapulae occupy less important positions, represent less adaptability, than bearers of the convex scapulae. Why? No one knows, but a fact is a fact, and it is related to something in the individual which expresses itself in the shape of his scapulae.

Dr. Graves has also followed the same principle in relation to the shape of the nose, in respect to the depth of the chest, in relation to the hair on the body, in respect to other "variations" as he calls them, which are hereditary and which remain relatively unchanged during life, and he has found you can make a formula by which you can say a man with a certain type of nose, a certain type of scapulae, a certain depth of chest, a certain amount of hair on his body, has a better chance to survive than people of the opposite type.

Dr. Graves' work happens to be better known among anthropologists, abstruse men of science, than among psychiatrists. He is a prophet more or less without honor in his own country. Last night I appointed myself publicity agent, and this is my first effort in that direction.

CHAIRMAN CAMPBELL.—I do not know whether you lectured in Edinburgh, Dr. Graves, before Dr. Myerson established himself as your publicity agent.

This relation of the anatomical to personality is still open for discussion. The investigators in this field are men of infinite patience, optimistic and philosophical.

Dr. Graves, will you conclude?

DR. WILLIAM WASHINGTON GRAVES (St. Louis, Mo.).—Mr. Chairman, I wish to thank Dr. Reynolds for his discussion. There was no particular point which he has raised which touched upon, as I understood it, the possibility of applying this principle to other features.

Dr. Myerson touched upon the same point, which I shall come back to in a little while.

Concerning the study 30 years ago, since clinical observations started me on this line of investigation, I have spent considerable time during these years, and my only regret is, that I cannot have an additional hundred years more, to carry these investigations on, not only in relation to shoulder blades as based upon the age-incidence principle but also upon every inherent feature common to a given race or stock to which the age-incidence principle can be applied, and the results expressed in zero plus or minus survival values.

If, in the course of time, future generations shall say that from the simple clinical observation a certain line of investigation was inaugurated, no matter by whom, which was diligently prosecuted, and out of which came a principle, forgetting all about personality, and who I happen to be, then I shall feel that that worker, whoever he may be, has really contributed something to the welfare of his race.

I should like to emphasize one thing and that is, it matters not what sort of a single characteristic a person may possess, whether it be shoulder blades or noses or blood groups or hair quantity, whether it be head length, or head breadth, whether it be stature or whatnot, as long as it rests upon one thing, if it is shown to have a biological significance, as I believe shoulder blades have, as long as any one thing can show a similar biological significance, that thing, whatever it is, has no significance whatever in the measurement of my friend, and he calls me his teacher. All I know about psychiatry I learned from "Abe" Myerson.

Whatever that may be, if you have a single feature, it matters not what sort of thing you have in the way of inherited variations, as the single feature, shoulder blade, or whatnot, that is not the measure of the person.

What does it mean, then? It means a certain definite sign of one's inheritance, and if one's inheritance means anything, then it is the combination of those inherited things, shoulder blades, noses, stature, chest depth, hair quantity, blood groups, and so on, that the combinations then will give us eventually a certain and a definite clinical approach to the problem of the sort of stuff in "Abe" Myerson, our worthy chairman, or anyone here in this room; it would be the combinations of those inherited features that

have a biological significance, as measured by the age-incidence principle, until we find something better than that to do with it, that will enable us to say, "That is the sort of stuff that is in individual 'A,' 'B,' 'C' and 'D'."

I must emphasize again, as I have done in every one of my publications, that a shoulder blade is but one feature shown as of biological significance in my research, and I pointed out a way by which other things may be similarly investigated, and I call upon the members of The American Psychiatric Association and physicians everywhere, to become interested in inherited variations in the study of families, the only way it can be done. It cannot be done in an armchair method at all. It means the study of each individual, of a family group; the children, the father, the mother, the grandfather, the uncles, the aunts.

I have had that happy experience in my studies of shoulder blades and other features, of accumulating data in the course of the years, on approximately one thousand families. There is positively nothing a physician can engage in as a problem which is so full of promise as a comparative study of individuals and the individuals of families.

I cannot sit down, Mr. Chairman, without expressing my appreciation for Dr. Myerson's flattering reference to my work. I am not a prophet, or anything of that sort. I am just a plain, ordinary clinician. I have accomplished so very little in my lifetime, that I wish I might have a hundred years more to continue the investigation which I feel I have merely inaugurated.

A NOTE ON THE BODY BUILD OF THE MALE HOMOSEXUAL.*

By JOSEPH WORTIS, M. D., NEW YORK CITY.

Research Fellow at Bellevue Psychiatric Hospital.

The question of the body build of homosexuals is important because it may help us to find what constitutional factors, if any, are involved in the development of homosexuality. In a small series of male homosexuals that I have lately studied I have found little indication of effeminate or intersexual types of body build, though other observers have recorded different impressions. Hirschfeld, who was the chief exponent of the intersexual theory of homosexuality, thought that intersexual types were common among inverters,¹ and Ellis² speaks of the frequency of feminine and infantile characters in the male homosexual. Though Freud³ remarks on the wide discrepancy between the mental and physical traits of homosexuals, he lends his authority none the less to the statement that there are contributing constitutional factors, without saying what their nature might be or how or where to look for them. None of these authors supports his impression with actual statistics. I have been able to find only two studies supported by actual measurements bearing on this question: the first of these by Arthur Weil⁴ who presented data some 12 years ago on a series of 380 mature male homosexuals seen in Berlin; the second, by Henry and Galbraith,⁵ on a series of 17 male homosexuals seen in a mental hospital in New York.

* From Bellevue Psychiatric Hospital and the Department of Psychiatry of New York University Medical College.

¹ "Die Homosexualität," pp. 141 and 144, 1920.

² "Sexual Inversion" in "Studies in the Psychology of Sex," p. 291, 1926.

³ See, for example, the discussion in "Über die Psychogenese eines Falles von weiblicher Homosexualität," 1920, in *Ges. Schriften*, 5: 321.

⁴ "Sprechen anatomische Grundlagen für das Angeborensein der Homosexualität?" *Arch. f. Frauenk.*, 10: 23, 1924.

⁵ "Constitutional Factors in Homosexuality." *Am. J. Psychiat.*, 91: 1249, 1934.

Weil's data, in the form of averages, and the data from his normal control group were as follows:

TABLE I.
WEIL'S COMPARISON OF THE PHYSICAL MEASUREMENTS OF A MALE HOMOSEXUAL AND AVERAGE MALE GROUP.

Author.	Subjects.	No. cases.	Average height, cm.	Average breadth of shoulders (inter-acromial), cm.	Ratio: shoulders to height, per cent.	Average breadth of hips (inter-trochanteric), cm.	Ratio: hip to height, per cent.	Ratio: hip to shoulder, per cent.
Weil . . .	Male homosexual	380	170.87	38.19	22.4	32.26	18.81	84.49
Weise . .	Average male group	1000	167.09	39.0	23.3	31.41	18.79	80.54

Weil concluded that the greater height, longer legs and wider hips of homosexuals were signs of constitutional eunuchoidism and femininity. It was unfortunate, however, that his control group data were taken from a study by another author⁶ from Leipzig in Saxony. I do not know the origin of the case material of the control group, but their stature is below the average for Germany and considerably below the average for northern Germany where Weil's study was made. Saxony and Silesia are the two provinces in Germany with the shortest inhabitants.⁷

Average statures above 170 cm. are, however, frequent in northern Germany, especially in the upper and middle classes. In a smaller control group of 80 normal men from Berlin used by Weil himself in an earlier paper⁸ the average stature was 169.3 cm. In a group of German soldiers the average height was 169.6 cm.⁹

⁶ Weise, S. "Untersuchungen über die Norm geschlechtsspezifischer Körperformproportionen." Dissertation, Leipzig, 1923.

⁷ For information on the variation of stature in Germany see for example Schwiening's "Rekrutierungstatistik" in Bischoff, Hoffman and Schwiening's "Lehrbuch der Militärhygiene," pp. 179 and 180, 1913.

⁸ "Die Körpermasse der Homosexuellen als Ausdrucksform ihrer spezifischen Konstitution." Arch. f. Entwicklungsmechanik der Organismen, 49: 538, 1921.

⁹ Sir Arthur Keith, "The Human Body," 1928, p. 65.

Among peasants and fisherfolk of Schleswig-Holstein for example the average height of the men is 169.6 cm.¹⁰ Among students and athletes in various parts of Germany the average height almost always varies between 170 cm. and 173 cm.¹¹ There is nothing remarkable in the height of the homosexual group. If we compare the data with a control group of more nearly comparable height, and contrast the data with three female groups, we find the following:

The most important anthropometric difference between the sexes lies in the breadth of the pelvis. Clearly, there is no indication from these data that the male homosexual tends to have an intersexual body build. Some authors use the relative length of lower and upper body as an index to intersexuality, but evidence has now accumulated that relatively longer legs are no indication of masculinity. Taller people of either sex have relatively longer legs and men and women of the same height have legs of the same length too.¹²

The figures of Henry and Galbraith show the following relations between shoulder and pelvic breadth, expressed in the ratio between the biacromial and interspinal diameters:

	No. cases.	Biacromial : inter-spinal ratio.
Homosexual male.....	17	71
Average male.....	123	75
Average female.....	105	80

These figures would indicate that the male homosexuals were, if anything, more masculine than the heterogeneous group, but the homosexual group was no doubt too small to be fully typical.

One is entitled to conclude that so far at least as these significant measurements are concerned there is no evidence that the male homosexual represents an intersexual physical type. A number of

¹⁰ F. Keiter, "Schwansen und die Schlei," 1931, Deutsche Rassenkunde, Bd. 8.

¹¹ Cf. Czuber, Rautmann, Bach, Arnold, E. Meyer, Heuer and others. The exact figures for German male university students are 169.35 to 174.6 cm. according to various investigators in different cities.

¹² See Bach, F.: Körperbaustudien an 641 Münchener Studentinnen. Zeit. f. Konstl., 16: 28, 1931; and especially: K. Saller: Der Geschlechtsunterschied in Verhältnis Stammlänge zu Körpergrösse beim Menschen. Zeit. f. Konstl., 16: 81, 1931.

TABLE II.
COMPARATIVE PHYSICAL MEASUREMENTS OF MALE HOMOSEXUAL,
AVERAGE MALE AND AVERAGE FEMALE GROUPS.

Author.	Subjects.	No. cases.	Average height, cm.	Average breadth of shoulders (inter-acromial), cm.	Ratio: shoulders to height, per cent.	Average breadth of hips (inter-trochanteric), cm.	Ratio: hip to height, per cent.	Ratio: hip to shoulder, per cent.
Weil...	Male homosexual above age of 23, Berlin.	380	170.87	38.19	22.4	32.26	18.81	84.49
Arnold*	Male university students, 18 to 25 years, Leipzig.	1270	172.74	38.00	22.0	32.46	18.79	85.42
Arnold*	Male athletic students, average age 20.7 years, Leipzig.	347	171.97-172.42	38.47-38.95	22.34-22.62	32.49-32.71	18.79-19.00	83.41-85.02
Arnold†	Female athletic students, average age 21 years, Leipzig.	25	161.44	34.63	21.45	32.54	20.15	93.84
Bach‡..	Munich Univ. female students, average age 21-22 years.	536-641	161.5	35.6	22.1	35.0	21.7	98.31
Bach§..	Female athletes, 20.9-21.2 years, Cologne.	178	157.9	35.4	22.4	32.7	20.77	92.37

* Arnold, A.: Körperentwicklung, Körperbau und Leibesübungen. Zeit. f. Konstl., 15: 358, 1930.

† Arnold, A.: Ein Beitrag zur Anthropologie der deutschen Frau und zur Frage der Einwirkung planmässiger Leibesübungen auf den weiblichen Körper. Zeit. f. Konstl. 15: 651, 1930.

‡ Bach, Fritz: Körperbaustudien an 641 Münchener Studentinnen. Zeit. f. Konstl., 16: 28, 1931.

§ Bach, Fritz: Ergebnisse der Körpermessungen an den Turnern und Turnerinnen bei den Kampfspielen in Köln 1926. Dtsch. Turnzeit., 72: Nr. 19 (Sonderbeilage) 1927.

the subjects in my own group of cases were effeminate, but the effeminacy involved their tastes and manners, rather than their body build and was attributable on close analysis to a wish to be a woman. One may look for other intersexual features: the pitch of the voice, the distribution of the hair or fat, or the development of the muscle, but these qualities are hard to measure and vary considerably in normal individuals. One has only to look about at a random group of adult men in the shower room of a bath house to see how very common for example the so-called feminine distribution of pubic hair actually is; or one may recollect how many otherwise normal men have high voices.

Some authors believe that the slighter degrees of intersexuality may merely affect the mind, or merely the sexual impulse; but I do not myself see the necessity for creating this dualism. Even assuming for the moment its validity, then the true consequence of mental intersexuality should be, not homosexuality, but rather bisexuality. One may also if one wishes look for other constitutional factors, especially for infantile or eunuchoid traits. The eunuchoid type has somewhat wider hips in proportion to the shoulders than the normal man but in contrast to the female type he is tall. The data of our authors do not fit in with this picture either.

It is true that most homosexuals prefer to think that their anomaly is anchored in their constitution. One of their earlier spokesmen¹³ wrote: "Our acts of love do not contribute to the propagation of the race; but a deep unfathomable force in Nature compels us to these fruitless acts: the responsibility rests with Nature, not with us." But the actual evidence for any constant or typical intersexual traits among male homosexuals is still wanting.

¹³ Ulrichs: *Inclusa*, 1898.

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THE LIFE AND WORK OF RICHARD MAURICE BUCKE.

AN APPRAISAL.*

BY GEORGE H. STEVENSON, M. D., LONDON, ONTARIO.

The subject of this essay, although attaining high place as a physician and psychiatrist, was remarkable also for the philosophy embodied in his writings and as the close friend and biographer of Walt Whitman. In this study it is proposed to review his life history, his work as a psychiatrist and mental hospital administrator, the genius as expressed in his books, particularly "Man's Moral Nature" and "Cosmic Consciousness" and his relationship to Walt Whitman.

For many interesting details of Bucke's life, the reader is referred to Coyne's¹ biography, to which this section is largely indebted.

Richard Maurice Bucke was born on the 18th of March, 1837, at Methwold, England, his father being an Anglican cleric, the Reverend Horatio Walpole Bucke, through whose mother the family tree extended to Sir Robert Walpole, first Earl of Orford, Prime Minister of England from 1721 to 1742; various members of which family had made in successive generations outstanding achievements, particularly in the realms of politics and letters. Certain members of the Bucke line had also achieved distinction, notably Charles Bucke, author of "Beauties of Nature" and "Ruins of Ancient Cities." Dr. Bucke's mother was Clarissa Andrews, whose brother, Biggs Andrews, Q. C., was a noted lawyer.

We do not know the reasons which impelled this clergyman, master of seven languages, to resign his parish and bring his wife and family to Canada in 1838, when the subject of this sketch was

* Presidential address before the Ontario Neuropsychiatric Association, London, Ont., March 18, 1937; this date being the hundredth anniversary of the birth of Dr. Bucke, formerly superintendent of the Ontario Hospital, London, and President of the American Medico-Psychological Association in 1897-98.

¹ Richard Maurice Bucke: A Sketch. By James H. Coyne, LL.D., F.R.S.C. Privately printed by Henry S. Saunders, Toronto, 1923.

an infant. The family settled on a pioneer homestead, practically adjoining the site on which later was erected the mental institution over whose destinies Richard Maurice Bucke was to preside for a quarter of a century. His mother died when he was only seven. His father remarried and the stepmother lived only until he was 16.

During these boyhood days he appears not to have attended school, but in his father's study he read voraciously and probably secured a much better education than is usually acquired by formal schooling. He helped with the work on the farm and even during these years was deeply interested in the problems of religion and philosophy.

Following the death of his stepmother, being only 16 at the time, he decided to leave home and see something of the world, and during the next five years he led a wandering adventurous existence, in which hardship and acute physical suffering played no small part. The same bold and vagrant urge which impelled his father to leave the comfort of the English countryside appears to have been responsible for driving this son into the wilderness for these five years. This period of his life, filled with high adventure, is difficult to reconcile with the studious, methodical dignitary he became in later years.

During this time he worked for three years in the Ohio and Mississippi valleys, working at any employment that he could get—gardener, farmhand, railroad employee, making staves in the cypress swamps of Louisiana, fireman and deck hand on steam-boats on the rivers. He then went further west to Salt Lake City with a pack train, the old-fashioned covered wagon. Continuing further west with a smaller party, they were attacked by Indians and suffered acutely for lack of food and water. He worked for a year as miner in the Nevadas.

In the fall of 1857, on a silver mining mission, which if it had ended more happily, might have made him a millionaire, he and the miner friend with him met misfortune in the nature of a blizzard and were snowbound in the Sierras. After terrible sufferings, he and his partner, Allen Grosh, reached a mining camp. Grosh became delirious and died 12 days later. Bucke was in a serious condition, both feet were frozen and had to be amputated, so that for the rest of his life he was obliged to use artificial feet. After several

months' convalescence the miners sent him to San Francisco. He evidently felt he had had enough adventuring and decided to return to Canada, presumably to settle down to a steadier and less dangerous existence.

His mother had left him some money and he used this to pay his expenses as a student in medicine at McGill University, graduating in 1862 and winning the prize for the best thesis, entitled, "The Correlation of the Vital and Physical Forces," which was printed in the British-American Journal. He read much outside of medicine, particularly philosophy and poetry. Coyne states that "his life for some years was one passionate note of interrogation, an unappeasable hunger for enlightenment on the basic problems. He taught himself French, that he might read Auguste Comte, Hugo and Renan; and German that he might read Goethe, especially *Faust*." His later writings were to show how these studies broadened his knowledge and increased his culture. He spent a year in Europe doing post-graduate work, returning to Canada and establishing himself in general practice in Sarnia in 1864. A year later he married Jessie Maria Gurd. He continued in general practice in Sarnia until 1876, presumably with fair success and taking an active interest in the social and political life of the times, becoming a close personal friend of Timothy Blair Pardee, at that time Provincial Treasurer, who appointed Bucke to the superintendency of the newly opened Hamilton Asylum in 1876. He was transferred to the superintendency of the London Asylum in February, 1877, on the death of Dr. Landor.

It will be seen that he came to this position with no special knowledge of psychiatry but with high intelligence and ideals, a rich background of experience and a keen interest in all things pertaining to the mind. The appointment was a particularly fortunate one and was more than justified by the success attending his efforts as an asylum administrator and as a courageous, independent thinker and idealist.

ASYLUM ADMINISTRATION.

Dr. Bucke's superintendency of the London Asylum covered a quarter of a century from 1877 to his death in 1902. For a year previous he had been superintendent of the Hamilton Asylum and for approximately 10 years preceding his appointment, had been in general practice in Sarnia.

The London Asylum was of course quite new when he took charge, having been opened in the autumn of 1870. A new era had dawned in Canada for the mentally ill (or "lunatics," this being the term commonly employed until the turn of the century). Previous to 1870 there had been a slow awakening to the need of suitable accommodation and humane care. It was only 20 years previously that the first institution for the care of the insane had been opened in Toronto, and it had been constructed not so much as a humane measure but because the gaols were filled with the insane and those in charge felt that the presence of insane persons in such numbers in the gaols interferred with their proper management. The pioneer work of Pinel, Esquirol and Tuke was hardly known in Canada and had made very little progress in European countries or the United States. Custody without hope was the level reached at the time of Confederation. Studies in the causes of mental disease had little or no scientific background. Even the current theological opinion was to regard such persons as enduring a punishment at the hands of God for their sins. The current lay opinion was that most insanity was the result of alcoholism, auto-erotic activities or simply "inherited."

Dr. Bucke's first year as superintendent, as expressed in his first annual report, might have given ground for the belief that he was simply continuing the unimaginative and repressive measures long in vogue. He commented favorably on restraining devices for difficult patients and takes pride in having added six crib beds and six restraint chairs to the already large number of such devices in use. He was satisfied with a very meagre diet for the patients, although at the request of the inspector, Mr. J. W. Langmuir, he did improve the breakfast. The diet in vogue was as follows:

Breakfast: Bread and butter and tea (with some cold meat for the workers).

Dinner: Beef and potatoes, with occasionally other vegetables, and three times a week dessert, always the same, bread pudding.

The supper might be stewed fruit or prunes, or still more simply, rolls or buns and tea.

He also approved the use of alcoholic "stimulants" in place of sedatives. Dr. Landor the year before had complained bitterly that as a result of criticism in the legislature he had been forced to reduce his expenditure for alcoholic beverages and showed that his

death rate had increased and his discharge rate had decreased and moreover 11 cases of scurvy had developed, all of these unfavorable findings being attributed to his inability to serve alcoholic beverages. Dr. Bucke appears by his remark to have had much the same mind on this matter as had his predecessor, Dr. Landor.

He did, however, institute a new treatment for autoerotic activities during this first year, by the use of a crude and pain-inflicting contrivance, which I am sure in later years he would not have approved of.

In the next year, 1878, he strikes his stride. He now concludes that from his observations alcohol is of little value, and he reduced the expenditure for this item from \$1800 to \$600. He improves the condition of the grounds and recommends the building of a chapel so that religious services can be held under more favorable conditions than offered by the amusement hall where they had been held. He says, "the sight of a stage is not favorable to the state of mind which ought to accompany the worship of God and without which the form of prayer is a senseless mockery."

In this year as well as the year previous, he had attended the annual meeting of the "Medical Superintendents of North American Institutions for the Insane," contributed to the discussions and visited many American mental institutions, from which visits he doubtless profited greatly.

Commencing this year and continuing to develop for the next few years are three major therapeutic interests: (1) reduction in the use of alcoholic beverages (although using small amounts of pure alcohol diluted); (2) the removal of all forms of restraint, including those he had spoken so highly of during the first year of his superintendency; and (3) providing occupation for patients so that 90 per cent of his patients were healthfully employed. Never did he recede from these three positions, although as the years passed he referred to them with increasing brevity. He gives credit to the occupation for doing away with the necessity of restraining apparatus, his contention being that patients are excited and restless only if work is withheld from them. He states, "work is the most valuable curative agent we possess." These forward steps brought him considerable criticism from other psychiatrists and he deserves the greatest commendation for making these radical changes. They

certainly placed the London Asylum in the forefront of mental institutions, not only in Ontario but throughout the continent.

We find him continually making improvements in the buildings to increase the comfort and well-being of the patients and even in 1880 he is advocating the cottage system for new asylums and gives these reasons for his opinion; (1) better classification and segregation; (2) better light; (3) better ventilation; (4) better health and lower death rate; (5) less cost of construction. He also stated if he were planning a new asylum for 1000 patients, he would have 10 or 12 buildings, each with capacity of not less than 50 beds and not more than 200 beds. In the light of subsequent construction at Mimico, Brockville, Whitby and many of the new institutions in the United States, one must pay tribute to his farsighted vision.

He advocates the appointment of a pathologist for research purposes.

His strong views on the use of alcoholic beverages are expressed as follows: "For many years my experience and studies have been leading me gradually to the conclusion that the use of alcohol, either in health or disease, is, in almost every case, a mistake." And again, "Alcohol is injurious to a healthy person and its value as a drug, if it has any, is very slight indeed." He admits many psychiatrists disagree with him but he thinks they are mistaken even as the blood-letters of a previous century had been mistaken.

Although Dr. Landor proved statistically that the reduced consumption of alcohol increased the death rate and decreased the discharge rate, Dr. Bucke quotes figures to prove the reverse. Reading reports on various matters from other superintendents one sees that they readily resorted to statistics to prove the point they were trying to establish and one wonders if they really had as much faith in figures as we now have skepticism.

In 1881 he establishes a medical library for the education of the medical staff.

He is not without pride in these accomplishments and states: "This asylum is becoming in extent and completeness one of the finest institutions of the kind on the continent." He had reasons for a feeling of satisfaction. But he is by no means satisfied and again urges on the government the appointment of a pathologist and the establishment of a research department.

By 1882 he is developing the open door attitude. In addition to three cottages, with 180 patients, being open all day, he now opens all the doors on the ground floor of the main building so that 200 additional patients may pass in and out of the building without hindrance. Additional doors were built as exits to increase this sense of freedom, a condition which we have largely failed to emulate. No unfortunate accidents occurred and he gives it as his opinion that "it is restraint that makes restraint necessary." He looks forward to still further increasing the liberty that might be enjoyed by the patients. Discharge rates in the '80's and '90's averaged about 40 per cent of the admissions as compared with 55 to 60 per cent now, but for fear of also being accused of manipulation, I shall draw no conclusions from these figures. Another advance in 1883 was the placing of women attendants (all widows) on certain male wards. He continued this for several years and referred to it as a valuable innovation, although I have not been able to learn how long this was continued.

In 1884 he makes a very modern sounding statement in discussing treatment when he says: "The object of treatment in the case of insanity is (to my mind) not so much the cure of disease as it is the re-humanization of the patient." Today—53 years later—we are employing this principle in the large schizophrenic group and regarding it as of major importance, the re-socializing and resynthesizing of the personality perhaps being the equivalent of his term "re-humanization." He certainly realized, well in advance of most psychiatrists, that emotional and personality disorders do more to wreck mental health than germs and other physical processes.

In referring to what has been accomplished by providing work and doing away with restraint he shows his essential honesty and courage by quoting a statement he made in his 1877 report as follows: "As for non-restraint, I do not believe it can be or ever was practiced." He then goes on, "I was young in the experience of the care of the insane, and as is often the case with beginners, dogmatic in the inverse ratio of my experience." Moreover he claims he uses no substitutes for restraint such as "wet sheet packs nor closed baths with only the head above the cover for half a day or so at a time." Before this condemnation of modern methods of hydrotherapy we may drop our heads to hide a momentary blush. Work has done away with any possible excuse for restraint and he

claims to have every patient at work, except some 15 or 20, of all those physically fit to work.

The next few years are fairly stable years with steady but perhaps less outstanding improvements. The most conspicuous achievement during this period which continued to the end of his superintendency was the increased use of recreational therapy. He had a "musical attendant" appointed, a young woman who played the pianos in the wards and at entertainments, he developed a band, orchestra and two dramatic clubs. We are told that anyone applying for a position as attendant in those days was asked the question, "What instrument do you play"? If the applicant played no instrument he had no chance of appointment. Dances (not the modern type but the graceful group dances of the Victorian era) were held twice a week. Entertainments by the asylum orchestra or dramatic club, or by outside organizations were also held weekly, at times being replaced by a lecture perhaps illustrated by slides, on such subjects as astronomy, physics, Russia, Napoleon, etc. "At Homes" for cards, chess, etc., were also held frequently. During the summer band concerts were held on the lawn and other sports were encouraged, notably cricket, which has had a long and honorable career in the life of this institution. The annual sports day was inaugurated in 1888 and has been held without interruption to the present time.

During the late 80's, Dr. Bucke had been feeling the need for a section of the asylum to be devoted especially to the care of the physically sick and infirm. In 1890 he establishes his first infirmary, under the direction of trained nurses, on the 4th floor of the main building, in what had previously been the amusement hall and a few years later a part of this is set aside and equipped as an operating room. He reports on the infirmary: "We have found it one of the best improvements that has ever been made at this asylum." Previously the physically ill had not the advantage of skilled nursing or special facilities of any sort, so we can understand his enthusiasm. Although grateful for the cooperation of the government in giving him so many additional facilities, it is evident he will never be satisfied but will always seek further improvements and he says: "The time will never come but what more improvements will still be needed."

In this year and for several years to come he requests a Turkish bath. "There is nothing more needed at the present time than a Turkish bath. It would be of greatest advantage especially in the treatment of melancholics." One cannot help wondering what events had led him to this conclusion, and why he becomes interested in hydrotherapy after such a scathing denunciation of it in 1884.

In 1891 he refers for the first time to his teaching the medical students, a course of 20 lectures, although he apparently had been teaching as professor of mental and nervous diseases since the founding of the Western University Medical School in 1882.

Dr. Bucke evidently found the small infirmary not as convenient and satisfactory as he had hoped because in 1892 he makes his first official request for a separate building for this purpose. In 1895 this request becomes urgent as the result of a very remarkable development in the methods of treating women patients. Dr. A. I. Hobbs had joined the staff of the asylum in 1893 and had had very good surgical training. Dr. Hobbs with the eager approval of Dr. Bucke, made many pelvic examinations of women patients and finding many pathological conditions, corrected these surgically. In 1895 some 21 patients were operated on and Dr. Bucke is quite enthusiastic concerning the beneficial results of the work and gives Dr. Hobbs all the credit for this. Dr. Hobbs was assisted by various physicians and surgeons of the city. In each subsequent report to the time of his death in 1902, he dilates on the remarkable results of such operative treatment, again resorting to statistics to prove that whereas the discharge rate among men and women had remained stationary at about 37 per cent, with the development of gynecological surgery the discharge rate for women had advanced to nearly 50 per cent, the rate for men remaining at its former level. Although Dr. Bucke took no active part in this operative work, he gave it every encouragement and assumed full responsibility for it, although many other psychiatrists condemned him for it, claiming the surgeons were finding pathology where none existed and that surgical intervention was not justified.

Dr. Bucke had the courage of his convictions and maintained his independent judgment and established standards that were soon followed by other mental institutions throughout the world. After many annoying delays the new infirmary was commenced in

1900. It was not completed until after his death and there is no doubt he died happy in the conviction that still greater things would result from the erection of this new building. That Dr. Bucke was able to debate on either side of a question is indicated by contrasting his statement in 1884 as to the chief element of treatment being the "re-humanization" of the patient with the statement he made in 1897 when his gynecological surgery has become so prominent: "It comes to this, that the treatment of the mind resolves itself into an endeavor to place the whole physical system on the best possible basis of health and efficiency."

While not directly related to asylum administration, his views on medicolegal aspects of insanity were entirely modern and far in advance of his contemporaries.

Dr. Bucke was a pioneer and a builder. He took charge of an asylum and by instituting the best treatment procedures available, chiefly by his own inventive intelligence, he left it a hospital and within a few years its name was actually changed from the Asylum for the Insane to that of a Hospital. The mentally ill of this province owed much to the fact that Richard Maurice Bucke occupied the superintendency of this institution during those 25 years and to the keen desire always uppermost in his mind for their welfare.

LITERARY AND PHILOSOPHICAL INTEREST.

If Bucke's work as a psychiatrist and asylum administrator are alone considered, he has achieved a niche for himself in the hall of fame of the medical profession. But his reputation rests not alone on these qualifications but has been greatly enhanced by his contributions to psychology and to literature. His annual reports are masterpieces of clear English revealing the year by year progress he was making and often incorporating essays on such subjects as "Alcohol and Disease" or "Medicolegal Aspects of Insanity." His addresses and discussions at the annual meetings of the American Medicopsychological Association and before other learned bodies were usually printed and enjoyed wide popularity.

His fame, and I think it can be called fame, really is based on three remarkable books which issued from his pen—"Man's Moral Nature," published in 1879; his biography, "Walt Whitman," which appeared in 1883; and in 1901, the year before his death, his master-

piece, "Cosmic Consciousness."² If one were not aware of these writings but saw him only through his asylum annual reports, one would picture him only as a hard working, keenly interested asylum superintendent, his mind filled with the thousand details and cares that take up so much of his time, and one could be excused for presuming that probably he had few hobbies or recreations and those probably of a very simple nature. But a reading of his books astounds one with the depth of his erudition, his remarkable speculative philosophical views, his keen and advanced religious interests, and whether justified or not, his amazing devotion to Walt Whitman. Although the titles of these books suggest a variety of subjects, they are really a trilogy dealing with the evolution of the moral nature of man, to a higher and ever higher condition, at last arriving at a state in which the individual may possess the ability or the faculty of knowing something of the mind of the cosmos, and of those having already achieved this development he placed Walt Whitman even ahead of Jesus Christ.

This suggests that Bucke was far from being orthodox in religion but there is no doubt of the intensity of his religious feelings nor of the high ethical standards which he always adhered to. Even as a child he relates that the great problems of religion concerned him deeply: God, Jesus Christ, immortality, eternal suffering. He states that he "dwelt on these and similar topics far more than anyone would suppose; but probably not more than many other introspective small fellow mortals. He was subject at times to a sort of ecstasy of curiosity and hope, as, on one occasion, when about 10 years old, he earnestly longed to die, that the secrets of the beyond might be revealed to him."³ At the age of 15 he read the "Vestiges of Creation," dealing with scientific positions not favored by orthodox religion. It will be remembered that at 16 he left home and spent five years in the desert and mountains, perhaps spiritually as well as geographically. Knowing the religious problems which often disturb adolescent boys, we can imagine something of the turmoil in his mind, his religious doubts, his clear intelligence demanding an intelligent religion but probably coming to

² *Cosmic Consciousness*, in its seventh edition, was published by E. P. Dutton & Co., Inc., in 1931.

³ In his autobiographical notes Bucke writes in the third person.

only partial conclusions. There is no record that he was ever an orthodox Christian, if by orthodox we mean church attendance, belief in the usual creeds and the practices of ritual, or faith in miracles or miraculous men. We are probably correct in assuming that even after several years in the practice of medicine he still is searching for religious truth and security and has not attained either confidence or happiness in his attempts to place himself in harmonious relation to the cosmos. Religious security and the exaltation and confidence which follow it, appear to have come at first gradually but later as a fairly rapid conversion with his introduction to the poems of Walt Whitman. In 1867, Dr. Bucke then being 30 years of age, Dr. Sterry Hunt, while visiting him, quoted some verses of Whitman's "Leaves of Grass" which must have intrigued Dr. Bucke. Coyne states that "the effect (on Bucke) was instantaneous and lasting." In another place, however, Bucke states that he had pondered over "Leaves of Grass" for a long time before becoming aware of their magical and magnetic qualities. In 1870 he borrowed Dr. Hunt's copy of the "Leaves" and in 1872 he obtained a copy of the 1871 edition. There is no doubt he was becoming strongly influenced by Whitman, and with his strictly honest and fearless attitude, he was willing to follow whomever might lead him to a satisfactory understanding of the cosmos.

Later in this same year (1872) while in England he experienced the peculiar psychological phenomenon which he subsequently designated as cosmic consciousness. We can do no better than to quote his own words:

He and two friends had spent the evening reading Wordsworth, Shelly, Keats, Browning, and especially Whitman. They parted at midnight and he had a long drive in a hansom cab. His mind deeply under the influences of the ideas, images and emotions called up by the reading and talk of the evening, was calm and peaceful. He was in a state of quiet, almost passive enjoyment. All at once, without warning of any kind, he found himself wrapped around as it were by a flame-colored cloud. For an instant he thought of fire, some sudden conflagration in the great city, the next he knew that the light was within himself. Directly afterwards came upon him a sense of exultation, of immense joyousness, accompanied or immediately followed by an intellectual illumination quite impossible to describe. Into his brain streamed one momentary lightning flash of the Brahmic-Splendor which has ever since lighted his life; upon his heart fell one drop of Brahmic Bliss, leaving thence onward for always an after taste of heaven.

Among other things he did not come to believe, he saw and knew that Cosmos is not dead matter, but a living Presence, that the soul of man is immortal, that the universe is so built and ordered that without any per-adventure all things work together for the good of each and all; that the foundation principle of the world is what we call love, and that the happiness of every one is in the long run absolutely certain. He claims that he learned more within the few seconds during which the illumination lasted than in the previous months or even years of study, and that he learned much that no study could ever have taught.⁴

This is extravagant language and to the psychologically un-initiated it may appear to border on the abnormal. Such experiences, however, have been, and are, not infrequent, and extend from the pleasurable effects of alcohol to the religious ecstacies of the saints and the theophanies of great religious leaders. These last phenomena Dr. Bucke designated as "cosmic consciousness," a momentary glimpse into and affiliation with the mind of the cosmos. His own "illumination" he would include in this group.

The originality of Bucke's mind is shown in the interpretation he placed on such phenomena. As stated earlier he did not believe in supernatural interventions, nor in miracles, consequently he could not accept the usual explanation offered by religious orthodoxy. At the same time he would have felt that the rationalistic interpretation, suggested by the present narrator, was altogether too shallow for serious consideration. A scientific mystic and an original thinker, he made his contribution to an understanding of these phenomena in the book entitled, "Cosmic Consciousness, a study in the evolution of the human mind," which although published in 1901, the year before his death had been slowly coming to fruition from the time of his own "illumination" in 1872, 29 years previously. He had made at least two short presentations of this subject before learned bodies, first in 1894, when he read a paper by the same title as he later gave to his book, to the American Medico-Psychological Association. Again in 1897 he developed the idea still further in his address, as president of the psychological section of the British Medical Association, entitled, "Mental Evolution in Man," before the meeting of the Association in Montreal.

The book is a beautiful and unusual product of the printer's art. It was published by Innes and Sons and was limited to 500 copies, separately numbered and autographed by the author. It challenges

⁴ *Cosmic Consciousness*, pages 7 and 8.

the interest and curiosity of the reader even on its title page with the quotation of Christ, "Verily, verily I say unto thee, except a man be born anew he cannot see the kingdom of God." That he believed these words had a very unusual meaning is revealed in his discussion in this book of the person and writings of Jesus Christ. The book is dedicated as a memorial to his son, Maurice Andrews Bucke, who had died a year previously in Montana as the result of an accident. This dedication is so beautiful and so tender, and moreover, shows Bucke's firm belief in the survival of personality after the grave, that I cannot refrain from giving it in full:

DEAR MAURICE:

A year ago to-day, in the prime of youth, of health and strength, in an instant, by a terrible and fatal accident, you were removed forever from this world in which your mother and I still live. Of all young men I have known you were the most pure, the most noble, the most honorable, the most tender-hearted. In the business of life you were industrious, honest, faithful, intelligent and entirely trustworthy. How at the time we felt your loss—how we still feel it—I would not set down even if I could. I desire to speak here of my confident hope, not of my pain. I will say that through the experiences which underlie this volume I have been taught, that in spite of death and the grave, although you are beyond the range of our sight and hearing notwithstanding that the universe of sense testifies to your absence, you are not dead and not really absent, but alive and well and not far from me this moment. If I have been permitted—no, not to enter, but—through the narrow aperture of a scarcely opened door, to glance one instant into that other divine world, it was surely that I might thereby be enabled to live through the receipt of those lightning-flashed words from Montana which time burns only deeper and deeper into my brain.

Only a little while now and we shall be again together and with us those other noble and well-beloved souls gone before. I am sure I shall meet you and them; that you and I shall talk of a thousand things and of that unforgettable day and of all that followed it; and that we shall clearly see that all were parts of an infinite plan which was wholly wise and good. Do you see and approve as I write these words? It may well be. Do you read from within what I am thinking and feeling? If you do you know how dear to me you were while you yet lived what we call life here and how much more dear you have become to me since.

Because of the indissoluble links of birth and death wrought by nature and fate between us; because of my love and because of my grief; above all because of the infinite and inextinguishable confidence there is in my heart, I inscribe to you this book, which, full as it is of imperfections which render it unworthy of your acceptance, has nevertheless sprung from the divine assurance born of the deepest insight of the noblest members of our race.

So long, dear boy.

YOUR FATHER.

The volume is divided into two main parts, the first dealing with his postulate, arguments and conclusions and the second being a series of biographical studies of 14 "undoubted" instances of cosmic consciousness and 36 "additional—some of them lesser, imperfect and doubtful instances."

The thesis developed is briefly this: Life has always evolved from the simple and primitive to the complex and refined and mankind is likewise developing, ever onward and upward. Increasing consciousness is at least a part of this development. He refers to the plant life as being without consciousness, lower forms of animal life as having simple consciousness, *i. e.*, being aware of what is going on about them at any given time but being unaware of their own mental processes and knowing nothing about their past or future. The race of mankind has a further development which he call self-consciousness, *i. e.*, man is aware that he is a man, of some of his own mental processes, capable of thinking, hoping and fearing. To some few persons of exceptional physical, intellectual and moral development comes now the acquisition through the phenomenon he refers to as "illumination" of a new type of consciousness, the awareness of the mind of the cosmos with which he is now and forever identified, although the experience may last but a few moments; his life is put on a definitely higher level, he rises above narrow sectarian orthodoxies, he has assurance of the intelligence governing the universe and of the essential rightness of everything. He knows that life is immortal and that his own intellectual life has been immeasurably enriched by the experience.

We cannot do better than to give in Bucke's own words the changes that occur in a person who acquires this development:

The person, suddenly, without warning, has a sense of being immersed in a flame, or rose-colored cloud, or perhaps rather a sense that the mind is itself filled with such a cloud or haze.

At the same instant he is, as it were, bathed in an emotion of joy, assurance, triumph, "salvation." The last word is not strictly correct if taken in its ordinary sense, for the feeling, when fully developed is not that a particular act of salvation is effected, but that no especial "salvation" is needed, the scheme upon which the world is built being itself sufficient.

Simultaneously or instantly following the above sense and emotional experiences there comes to the person an intellectual illumination quite impossible to describe. Like a flash there is presented to his consciousness a

clear conception (a vision) in outline of the meaning and drift of the universe. He does not come to believe merely; but he sees and knows that the cosmos, which to the self-conscious mind seems made up of dead matter, is in fact far otherwise—is in very truth a living presence. He sees that instead of men being, as it were, patches of life scattered through an infinite sea of non-living substance, they are in reality specks of relative death in an infinite ocean of life. He sees that the life which is in man is eternal, as all life is eternal; that the soul of man is as immortal as God is; that the universe is so built and ordered that without any peradventure all things work together for the good of each and all; that the foundation principle of the world is what we call love, and that the happiness of every individual is in the long run absolutely certain. The person who passes through this experience will learn in the few minutes, or even moments, of its continuance more than in months or years of study, and he will learn much that no study every taught or can teach. Especially does he obtain such a conception of THE WHOLE, or at least of an immense WHOLE, as dwarfs all conception, imagination or speculation, springing from and belonging to ordinary self-consciousness, such a conception as makes the old attempts to mentally grasp the universe and its meaning petty and even ridiculous.

Along with moral elevation and intellectual illumination comes what must be called, for want of a better term, a sense of immortality. This is not an intellectual conviction, such as comes with the solution of a problem, nor is it an experience such as learning something unknown before. It is far more simple and elementary, and could better be compared to that certainty of distinct individuality, possessed by each one, which comes with and belongs to self-consciousness.

With illumination the fear of death which haunts so many men and women at times all their lives fall off like an old cloak—not, however, as a result of reasoning—it simply vanishes. The same may be said of the sense of sin. It is not that the person escapes from sin; but he no longer sees that there is any sin in the world from which to escape.

The instantaneousness of the illumination is one of its most striking features; it can be compared with nothing so well as with a dazzling flash of lightning in a dark night, bringing the landscape which had been hidden into clear view. The previous character of the man who enters the new life is an important element in the case. So is the age at which illumination occurs. Should we hear of a case of cosmic consciousness occurring at twenty for instance, we should at first doubt the truth of the account, and if forced to believe it we should expect the man (if he lived) to prove himself in some way, a veritable spiritual giant.

The added charm to the personality of the person who attains to cosmic consciousness is always, it is believed, a feature in the case.

There seems to the writer to be sufficient evidence that, with cosmic consciousness, while it is actually present, and lasting (gradually passing away) a short time thereafter, a change takes place in the appearance of the subject of illumination. This change is similar to that caused in a person's

appearance by great joy, but at times (that is, in pronounced cases) it seems to be much more marked than that. In these great cases in which illumination is intense the change in question is also intense and may amount to a veritable "transfiguration." Dante says that he was "transhumanised into a God." There seems to be a strong probability that could he have been seen at that moment he would have exhibited what could only have been called "transfiguration." In subsequent chapters of this book several cases are given in which the change in question, more or less strongly marked, occurred.⁵

It will be seen therefore that Bucke looked upon this experience as a normal non-supernatural growth in mental life. He proved (by statistics, again) that it is occurring with increasing frequency, as succeeding ages improve in their moral development. Even as sense of harmony and color are of relatively recent acquisition by the race and perhaps fairly easily lost, so cosmic consciousness is only acquired by a few and they are conscious of it for a few moments only, but he expresses the confident assurance that ultimately many, perhaps all, will acquire it.

The biographical sketches of the 14 "undoubted" cases of cosmic consciousness and the 36 "lesser imperfect and doubtful" cases show a most intense study of the writings or experiences of the subjects of each biography. One is amazed at the extent of Bucke's reading and the keen analysis he makes of each. One cannot follow him with confidence to all his "proofs" and conclusions. While possessing an amazingly clear and intelligent mind, one feels he labors his proofs at times and modifies the facts to suit his hypothesis. His most remarkable example of an extravagant conclusion is his study of Jesus Christ. It has been stated before that Bucke was far from being an orthodox believer, although his belief in immortality could not have been more orthodox. His attempts to prove that whenever Jesus refers to the "Kingdom of God" or the "Kingdom of Heaven" he really had in mind cosmic consciousness, verges on the absurd. While there is little doubt that Jesus experienced this same phenomenon at the baptism by John in the Jordan and moreover fully believed it to be a revelation from God, there is, nevertheless, no reason to think that his ardent evangelism was simply to urge other men to a similar experience. When he referred to a Kingdom of God, he almost certainly meant a kingdom of righteousness on earth, the conquest of sin and social inequality,

⁵ Cosmic Consciousness, pages 60-63.

the betterment of living conditions, the abolition of selfishness, fear and greed. But Bucke is out to prove his theory and can perhaps be pardoned even for such an extravagance.

In the biographical sketch of Francis Bacon, he introduces the subject with these words: "Without more ado or any beating about the bush it may as well be frankly stated at once that the view of the present editor is that Francis Bacon wrote the 'Shakespeare' plays and poems." While not forgetting that he is trying to prove the existence of cosmic consciousness, he nevertheless enters into a very lengthy argument to prove that Bacon was Shakespeare. This was one of his favorite themes for discussion.

William James in his "Varieties of Religious Experience" quotes Bucke's "Cosmic Consciousness" in his chapter on "mysticism." He refers to it as a "highly interesting volume" but expresses no opinion on Bucke's conclusions, being content to include it along with other similar references as a "mystical" phenomenon, having great subjective importance to the person experiencing it.

Certainly this phenomenon was of major importance in the life of Bucke, and the book is a remarkable document, revealing originality, intensity and concentration of effort, wide and erudite knowledge, and is a milestone on the road to a better understanding of some of the unusual and as yet inexplicable behavior of the human mind. Even separated by only 36 years from the appearance of the book we can scarcely come to the conclusion at which its author arrived, but we have the most profound respect for his courageous and independent thinking, and psychology is permanently indebted to him for this contribution.

His second book in this trilogy (although first in actual date of publication, 1879) is definitely related to "cosmic consciousness" and his own "illumination." He himself states—"he (*i. e.*, Bucke) subsequently wrote a book (*Man's Moral Nature*) in which he sought to embody the teaching of this "illumination." As the theme of the book is the evolution and improvement of the moral qualities of man, and as the illumination had convinced him of the essential goodness of the universe, the relationship is apparent. His statement should not be taken to mean that the arguments developed in the book were a supernatural revelation. The influence of Whitman and the "Leaves of Grass" is indicated in the dedication. "I dedicate this book to the man who inspired it, to the man who

of all men past and present that I have known has the most exalted moral nature—to Walt Whitman."

Although giving credit to both Whitman and his illumination, he states in the introduction "To the Reader" that "this book has been not so much written as it has grown. The thought grew and its shadow fell on the paper . . . I knew at once that this thought contained what I had so long looked for . . . and that it had some novelty, truth and importance." This thought was the answer to certain questions which had puzzled him . . . "the nature of good and evil—the causes and proportions of happiness and unhappiness—whether mankind was getting better or worse—what is the meaning of vice and virtue—and whether there were such things in nature as rewards and punishments—and if so what these meant." It will thus be seen that the book if it answers all these questions in a satisfactory manner, can be of no small significance. A close reading of it convinces one that it is a remarkable document. Although largely philosophical, his knowledge of the autonomic nervous system was remarkable and many of his deductions have been proven only in recent years. His superlative intelligence and reasoning powers are seen to better advantage in this book than in any other of his writings.*

BUCKE AND WHITMAN.

Whitman was the Messiah, who, in person and through his gospel, "Leaves of Grass" revealed the cosmos to Bucke. From the age of 30 until his death at 65, Whitman had no more faithful disciple. It is no exaggeration to say that Bucke regarded Whitman as a more exalted personage than Jesus Christ and although recognizing the claims of Christianity and its founder, he nevertheless believed that Whitman revealed God still more clearly. Certain it is that Whitman and the "Leaves" filled Bucke's life to overflowing.

It will be recalled that from early boyhood Bucke had had an intensely religious nature and that the problems and mysteries of the universe constantly challenged him. He emerged from his five years in the wilderness at the age of 21 with only partial solutions. Even 10 years later, established in general practice in Sarnia, we can assume that he had not achieved a harmonious relationship with

* A more detailed analysis of this book will be found in the author's reprints.

the cosmos. The free floating molecules of his spiritual life were still seeking satisfaction when "Leaves of Grass" came to his attention. In them and their author he found the answers to all his questions and to all his religious uncertainties. The solutions were not instantaneous but one can assume that by the time of his "illumination" in 1872 he had achieved full confidence and security.

It was not until 1877 however that he actually met the author at his home in Camden. Such enthusiasm as he may have had previously was now increased ten fold. His own account of the effect of this first meeting, which was followed by a life-long friendship, is interesting:

A sort of spiritual intoxication set in which did not reach its culmination for some weeks, and which, after continuing some months, very gradually in the course of the next few years faded out—it is certain that the hours spent that day with the poet was the turning point of my life. The upshot of it was the placing of my spiritual existence on a higher plane.

Following the meeting Bucke became an active protagonist in the controversy that was raging as to the essential morality or immorality of "The Leaves." He gave various addresses and wrote articles for journals, defending the poet and the high idealism back of "The Leaves." It will be remembered, too, that within two years of his first meeting with Whitman he published—"Man's Moral Nature" and dedicated it to Whitman.

The following year, 1880, Whitman visited Bucke at his home in London and for four months these two enjoyed the closest intimacy. Emanating from this visit was Bucke's desire to write the official biography of Whitman, to which request the poet gave his ultimate consent and assisted with preparation of material. Coyne states that Whitman himself wrote the first 24 pages. Due to difficulties with publishers the biography did not appear until 1883, although ready much earlier. This is the third book of the trilogy. Bucke claimed that his earlier book, "Man's Moral Nature," dealing with the origin and development of the moral values should be regarded as an introduction to this book, which he regarded as the biography of a man whose moral nature had eclipsed all others.

The book itself is a fulsome eulogy of Whitman. There was nothing half-hearted about Bucke's devotion to his revered leader. There is no suggestion of "debunking." Whitman had shown his

disciple the finest revelation he had ever had of the universe. Bucke was adoringly grateful.

He dilates—"His (Whitman's) face is the noblest I have ever seen. I have never known him to sneer, or to manifest in any way or degree either alarm or apprehension. No description can give any idea of the extraordinary physical attractiveness of the man." Those of us who have seen only photographs of Whitman, and to whom "Leaves of Grass" is only an unusual type of blank verse with occasional high notes, may wonder at Bucke's superlatives and undiscriminating partisanship. One recalls that in his therapeutic projects in the asylum, in his views on the Shakespeare-Bacon controversy, his opinions on alcohol, whatever views he held he always held them 100 per cent. There was almost the element of religious conversion and ecstasy. Witness this statement—"Whitman has, and always will have, the eternal glory of being the first man who was so great that even the Cosmic sense could not master him."⁶

The first part of the Biography of Whitman is a detailed description of the life history and characteristics of the poet as already indicated. In the second part he analyzes "Leaves of Grass" and gives the history of the publication of the various editions. It is equally obvious he has no adverse criticisms of the poems. To him they are the holy writings of this new Messiah, which when understood, reveal depths of wisdom never before attained. He states:

"Leaves of Grass" belongs to a religious era not yet reached, of which it is the revealer and the herald. This book will be of incalculable assistance in the (moral) ascent.

What the Vedas are to Brahmanism, the Law and the Prophets to Judaism, the Avesta and Zend to Zorastrianism, the Kings to Confucianism and Taoism, the Pitakas to Buddhism, the gospels and Pauline writings to Christianity, the Koran to Mohammedanism, will "Leaves of Grass" be to the future of American civilization. Those were all gospels; they all brought good news to man, fitting his case to the period. They were all "hard sayings" and the rankest heresy at first, just as "Leaves of Grass" is now. By and by it too will be received, and in the course of a few hundred years, more or less, do its work and become commonplace like the rest. Then new gospels will be written upon a still higher plane.

In the meantime, "Leaves of Grass" is the bible of Democracy, containing the highest exemplar of life yet furnished. Within it is folded a new spiritual life for myriads of men and women.

⁶ Cosmic Consciousness, page 77.

In Cushing's "Life of Osler" there is quoted a reminiscence of Bucke by this other great Canadian physician. "At this time, of the two men (Whitman and Bucke) Bucke interested me more. Though a hero-worshipper, it was a new experience in my life to witness such an absolute idolatry. Where my blurred vision saw only a fine old man (Whitman), full of common sense and kindly feelings, Bucke felt himself in the presence of one of the world's greatest prophets. One evening . . . I drew Bucke on to tell the story of Whitman's influence. It was an experience to hear an elderly man—looking a venerable seer—with absolute abandonment tell how 'Leaves of Grass' had meant for him spiritual enlightenment, a new power in life, new joys in a new existence on a plane higher than he had ever hoped to reach. All this with the accompanying physical exaltation expressed by dilated pupils and intensity of utterance that were embarrassing to uninitiated friends. This incident illustrates the type of influence exercised by Whitman on his disciple—a cult of a type such as no other literary man of our generation has been the object." So sincere was Bucke's devotion to Whitman that he even imitated his clothing, wearing plain gray clothes, negligee linen shirt, slouch hat and flowing beard.

A few illustrations have been given to indicate the remarkable devotion Bucke held for Whitman and this feeling was quite reciprocated by Whitman. Coyne quotes Whitman as saying that Bucke had saved his life in a recent illness. "His skill, decision, brotherliness, pulled me ashore. Osler has his points, but after all the real man is Dr Bucke. He is the top of the heap. He has such a clear head, such a fund of common sense, such steady eyes, such a steady hand. As you say, Bucke is a scientist, not a doctor; he has had severe personal experiences, is an expert on questions involving the mind, is in every sort of way a large man, liberal, devoted, far-seeing. I especially owe him so much—oh, so much."

It should be noted in passing that Bucke, along with Harned and Traubel, was made a literary executor of Whitman's writings on the death of the poet in 1892. He was an honorary pall bearer and speaker at the grave.

And so Bucke lived his life—a full life and a happy one, although perhaps somewhat austere and mentally isolated from all except the few who knew him best. And yet he commanded the respect of the best minds of his day. He was made a charter member of

the Royal Society of Canada, following publication of his book, "Man's Moral Nature." In 1897 he was elected president of the psychological section of the British Medical Association and in the following year, 1898, was president of the American Medico-Psychological Association. The achievement of such honors is an indication of his standing among scientific men.

One remembers his accomplishments as director of the mental institution over which he presided. His enthusiasm and broad humanitarianism in this his life work enabled him to make an outstanding success of it and psychiatry owes him a debt of gratitude for the part he played in advancing the care of the mentally ill from the asylum era to the hospital era. It is perhaps not too great praise to link his name with those other splendid pioneers in psychiatry—Pinel and Tuke. Our admiration for him increases yet much more when we recall that parallel with his work as an administrator went great achievements in literature, psychiatry and philosophy. We do not need to be critical of his almost fanatical devotion to Whitman and his flaming evangelism on behalf of Whitman's Gospel and the religion of American Democracy as he called it. Whitman revealed God to him in a way no other religious leader, not even Christ, had been able to do. His own life was immeasurably enriched thereby and, without doubt, the greater part of his success and accomplishments as a scientist and humanitarian were due to the fact that he had reached a harmonious relation with the cosmos, even through this unusual channel. His intense religiosity could not be limited by sectarian boundaries. He belonged with those referred to in Lord Beaconsfield's story. Beaconsfield, chatting with a friend, remarked—"The greatest men in the world all belong to the same religion." "And what religion is that," asked his friend. Replied Beaconsfield, "They never tell. They never tell."

Even with his unorthodox religious views, it is reported that a noted clergyman in London interrupted his sermon on one occasion to exclaim, "One of the greatest men of the past several centuries resides here in London and very few of you know him—Dr. Bucke."

Death came suddenly—a cerebral haemorrhage on the night of the 19th of February, 1902, following an evening of keen intellectual debate and conversation with a few friends. He died having

lived an abundant life devoted to the welfare of mankind. He died in the assurance of immortality and a supreme confidence in the wisdom and love of God and in the hope of continuing his work in some other sphere than this. Whether he works in some new life none can say, there being no scientific evidence of a life after death, but he achieved immortality by his life; he invested his life in the lives of his fellows and he added in no small measure to the increase of love and faith which he believed to be the duty of all conscientious citizens.

On this, the centenary of his birth, we honor a great psychiatrist, psychologist, philosopher, scientist and humanitarian. Richard Maurice Bucke will not be forgotten.

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GROUP ACTIVITIES ON A CHILDREN'S WARD AS METHODS OF PSYCHOTHERAPY.*

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The children's ward at the Bellevue Psychiatric Hospital is an active service for children who need examination, observation or treatment for every type of nervous, mental or behavior disorder. We usually have from 40 to 60 children of both sexes, ranging from 2 to 15 years of age. In general, the service is organized as Potter^{1, 2, 3} has described. But while Potter looks upon the ward life as a means of individual observation, treatment and reeducation, we have tended to utilize ward activities for group psychotherapy. Our emphasis upon group psychotherapy has been partly due to the fact that we have found it more economical in the treatment of a large number of children with a limited staff of psychiatrists. But we have found also that group activities are a more successful way of communing with children, of getting them to express their emotional problems, of giving them full play for their impulses for aggression or love, and of relieving them of anxiety and apprehension. Finally, we tend to emphasize the specific value of group therapy for its socializing effect or as a means of aiding the child in becoming a more successful social personality.

The essential needs of any normal child are food, clothing, warmth, support (from falling until they have learned to walk), protection from an aggressive world, and demonstrations of love from the persons who give them these things. Upon the satisfaction of these needs is built the personality. The essential drives of the child are for a free expression of his own impulses to be aggressive⁴ and to love and the chance to exercise the growing functions of his physical, intellectual, emotional and social personality. A deprivation of the satisfaction of the needs of the child or a deprivation

* Read at the ninety-second annual meeting of The American Psychiatric Association, St. Louis, Mo., May 4-8, 1936.

of the demonstration of love which should accompany it, results in developmental retardation, in apprehension and fear, in prolonged infantile behavior, and in attention-getting mechanisms. A repression of the drives results in feelings of inferiority, anxiety and guilt.

Behavior problems, psychopathic reactions, neurotic reactions and conduct disorders arise from deprivations in the satisfaction of these needs and drives, due to a failure on the part of parents or parent substitutes, or to constitutional weakness or organic disease in the child. Behavior problems may be associated with mental deficiency, epilepsy, organic brain disorders or somatic diseases, because such children find it difficult to obtain or accept the satisfaction of their needs, especially as their needs may be greater, and because such children find it difficult to express their own impulses or exercise their growing functions.

THE FUNCTIONS OF A WARD FOR CHILDREN'S BEHAVIOR PROBLEMS.

The function of a ward which cares for behavior problems of children obviously should satisfy all their needs for physical growth and health and for exercising the expanding physical, intellectual, emotional and social functions. In addition, it should strive consciously to supply those things which a child with a behavior problem most needs. These are:

1. Free expression of the child's neurotic complexes to the psychiatrist;
2. Relief from feelings of anxiety, guilt, inferiority and insecurity;
3. Demonstrations of affection and approval from the adults who are serving him;
4. Free expression of the child's feelings of affection;
5. Free expression of the child's impulses for aggression;
6. Opportunities for the child to become socially at ease and socially acceptable at his own value;
7. Crystallization for the child's ideologies which are suitable for himself and the social milieu in which he lives.

STAFF PERSONNEL.

It must be recognized that the children will look to every adult member of the staff or personnel as a possible donor or recipient of affection or aggression. Where there are two physicians on the ward, one a female and the other a male, there is a chance for a choice of father or mother substitute. The younger children may be more prone to accept the woman physician as the good and loving mother or severe and threatening mother, depending in part on the child's relationship to its own mother, as well as the child's actual contact with the physician. The children of the latency stage are more or less indifferent in their choice of a mother or father substitute, unless they have remained infantile, dissatisfied, dependent in their relationships to their mother, then they may seek a mother substitute. The children in early adolescence are inclined to react strongly for or against one or the other physician, due partly to sexual preferences.

Nurses, teachers and other members of the staff often serve as arbitrators between the child and the physician, and should be freely utilized as such. The tendency for children to throw all their anxiety and apprehension upon the person of one physician and all their admiration and confidences upon another person should be recognized. Active treatment often can be performed through some other member of the personnel than the psychiatrist, when that person has received the attachment of the child. Teachers with whom the child spends several hours of the day are often the recipients of such attachments and the physician may be able to guide the therapy through the teacher far better than he can perform it directly, even if the psychiatrist had unlimited time. Special identification processes often play a rôle. Attractive nurses usually win the hearts of the young adolescent boys, and can do more under the guidance of the psychiatrist to relieve the children's emotional stress than the psychiatrist in daily psychotherapeutic hours.

Free expression of affection, gift-giving, granting of special favors by the person who is the recipient of the child's affection and confidence is encouraged on the wards, especially for the neurotic child who is full of feelings of his own inferiority and of anxiety and guilt. It should be discouraged only in those children where it is known that such contacts give erotic satisfaction because of previously acquired sex habits. In these children other means

of satisfaction should be cultivated by social activities and interests in the inanimate world. The hyperkinetic child who is continually grasping and clinging to adults and seeking affection just as he is continually aggressive towards children, needs his impulses directed toward more clearly patterned activities such as he may obtain in different types of shop work, music or school work.

STAFF CONFERENCES.

Numerous conferences with the different workers on the ward, including junior psychiatrists, social workers, teachers, visiting teachers, physicians, artists, musicians, occupational therapists and psychologists, and personal supervision by the physician, are important to encourage all the workers to be continually alert to observe features in the behavior of the individual child or in group behavior which will help in a better understanding of the psychology of children and to guide the individual child. It is most important that everyone at all times should maintain an objective attitude towards the child's problem and help him get the same attitude. Several questions should be asked: Why is the child on the ward? What has gone wrong to cause him to be socially rejected so that he is placed on a ward? Who put him there and why? Who is to blame? The neurotic child in most instances will say that he is to blame; that he has been bad and he deserves it. He understands that hospitalization is punishment. The first step in treatment is to clear up this misconception in the minds of both the child and members of the staff. Psychotherapy is not punishment. The second step is to get both the child and the staff to realize that the effort is, first and foremost, to determine the cause of the behavior difficulty and to give an understanding of the cause to the child in as clear and objective a way as possible. The next step is to relieve the child of his feelings of guilt, of inferiority, of shame, of rejection for his past behavior and of apprehension for the future. The fourth step is to give him the opportunity for new and satisfying experiences and social relationships.

BODY INTERESTS.

It is justified to place a strong emphasis on the well-being of the child's body while he is in the hospital. This may be accom-

plished in the most natural way utilizing the usual hospital routine and physical examinations. Every effort should be made to improve and promote the child's physical health. Tonsils, teeth, eyes, posture, weight, skin, undescended testicles should be considered. Furthermore, every effort should be made to improve the appearance of the child's body and to give him a feeling of satisfaction in this. The culture of the body beauty is an appropriate interest for young girls, and attractive nurses are the best teachers. The girls' dressing room is a suitable center for the girls to collect several times a day to learn to bathe themselves, care for their hair, teeth and finger nails; use cosmetics, care for their clothes and choose such ornaments and jewelry as are available. It is a proper place to concern themselves with problems relating to menstrual periods, or such problems pertaining to sex as they wish to discuss with the nurses. It has also been found that this is the place and time when they discuss and consider with the nurses most of the problems of conduct and behavior which have arisen during the day and all the little important episodes of the schoolroom and playgrounds. Levy^{5, 6} has emphasized what he calls the psychiatric physical approach, which is a frank approach to the child through the doctor-patient relationship of examining, discussing, approving or evaluating the child's body; and he has shown the importance of body interests in the psychology of the normal and neurotic child. Schilder⁷ has made an analysis of the ideologies as a psychotherapeutic method especially in group treatment, and emphasized the attitudes towards the body in terms of beauty as one of the basic problems and the consideration of it among adults as one of the justified means of clarifying ideologies in group psychotherapy.

Schilder and Wechsler⁸ have shown that the small child's concept of the inside of his body is that it contains only food. When we ask a child what a mother is good for, the child invariably will say, "to give food." The food-giving mother is, therefore, the first symbol of the loved object. Hence it is not surprising that one of the most active centers on our ward is the diet kitchen and dining room. The diet kitchen maid's unbounded enthusiasm in the children's food, her efforts to please each child as much as possible, her patience in letting them come into the kitchen to help with the work, and her ability to distribute every little tidbit of food as a favor, as well as her guardianship of the fruit brought by the

parents, and her tendency to note the child's gain in weight, health, appearance and behavior, constitute a positive factor on our wards. I mention this as an example of how the normal needs and interests of the child and the routine activities of the ward with a well-chosen and directed personnel may in the most natural way contribute to sound therapeutic practices.

WARD ROUTINE BASED ON NATURAL RHYTHM.

The ward routine, if properly planned, is something more than a merely economical and convenient means of caring for children. It is important to emphasize the value of the rhythm of routine in contrast to allowing the child to follow his own undirected impulses. Though much may be said in favor of the modern educational methods in the individualization of the child, routine group activities may be a justifiable means of socialization when the routine is based upon the natural rhythms of the child's growing organism and the natural environment. It should be based upon the normal rhythms of sleeping, eating, resting; and physical, intellectual and emotional activity. The rhythm must adapt itself to the age level, to the intellectual maturation, to the motility problem and the attention span. It is also modified by the natural environment, day and night, and the season; and to some extent by the social environment, and available facilities. Thus in a city hospital it seems necessary to adjust the routine to the régime of the nursing and dietary departments which requires that the children get up, go to bed and eat their meals at early hours. There is nothing arbitrary about such a routine. It is determined by laws of its own which can be understood by the child. In a group of children which are predominantly hyperkinetic or neurotically restless it is important that the rhythm of the routine be in short waves. It is a new experience and one which gives continued satisfaction to the child for him to find himself quickly and easily experiencing a rhythm which has meaning in itself and which can be depended upon to continue without change. To the majority of our children, the only disciplinary method that is needed is to drop the child from the routine for just one step. If the child makes himself unwelcome in the music class, he is removed to the nearest quiet room or corner by himself until the music class is over, or if he wishes to

return sooner he may do so without explanation. Exclusion from the routine does not carry over into the next activity unless the behavior does, which is not often.

Where serious behavior difficulties arise in a group, it is often possible to show that they are due to the cumulative effects of anxiety caused by some one seriously neurotic child or the uncontrolled behavior of some organically psychotic child. The behavior of one such child in a group may stir up the anxiety of the whole group until the cause is discovered and removed, after which the routine will resume its usual rhythm.

GROUP ASSURANCE TO ALLAY APPREHENSION FOR FUTURE INSECURITY.

The child should be told at the earliest possible time what the future holds for him and to what extent his behavior can modify his future. It should be the unshaken faith of the children that the staff will play square with them both in regard to the present and what is promised for the future. This is not always easy to accomplish on a ward where the admission and discharge rate is three or four patients a day and where the children come and go through all sorts of agencies, including the children's courts, and where each child remains on the ward a relatively short time. One of the most important means is to have the confidence of the outside agencies and children's courts so that it will be possible to foretell what the outcome for the child will be, following certain recommendations and which in turn are partly determined by the child's wishes and behavior. When a child must go to a situation for which he cannot easily accept the reasons, it must be clearly explained both to the child and to all his companions. In emotional crises it is nearly always better to work with a group than with a single child who is too overwhelmed by his emotions to express them. Among a group of children there are enough who can simultaneously threaten and revile the physician without the individual child himself having to feel too much guilt and anxiety for the revolt. If the revolt is not justified, someone in the group will surely sense it and express it for the group.

SPONTANEOUS ORGANIZATION TO RELIEVE GUILT AND ANXIETY.

Sometimes there have been episodes when the group has become self-organized on the basis of mutual and overwhelming feelings of anxiety and fear. Frequently they have become self-organized on the basis of sex tension on the ward, or to apprehension as to the destiny of the children when they leave the ward. These are group phenomena and they should be recognized and treated as such. They are apparently more likely to occur among a group of behavior problems than in a normal school group. With the large group of children which we have, individual treatment would not cope with the problem and would show an essential failure to understand the phenomena of group psychology of children at this age.

On one occasion a schizoid constitutionally inferior child continued masturbation openly on the ward and as a result several boys from 8 to 11 were kept in a constant state of unrest. However, this did not display itself in open sex play but in organized mistreatment of this one child upon whom they seem to pour all their guilt. Once the situation was recognized (which was done, it should be emphasized, by individual contact between the physician and the worst offender) the boys were told that they were punishing this child because they felt guilty themselves. They further were told that the boy was a sick child, not because he masturbated, but that he masturbated because he was sick. They were quite capable of understanding this and took a protective attitude towards the child and became unconcerned about his masturbating habits.

It is customary to tell the children when one child is mentally sick to a greater degree than the others. This is the best way of soliciting the interest and consideration of the other children. It also allays their anxiety and fears that they may become like this child because they have behaved in ways which they believe to be bad. The most seriously schizoid children can be kept in a group if this technic is used, to the great benefit of the sick child and without detrimental effects on the others. In this respect children seem to differ somewhat from adults.

SUPERVISED ORGANIZATION INVOLVES SIMILAR FEATURES.

Even efforts to organize the children into something similar to the monitor system in the schools, or the Scout organization have

come to disaster among our children. Our most recent experiment was an organization called The G-Men. Each member was given a badge marked G-Men. The "G" was supposed to stand for Mr. G., who was a justly admired male nurse on the ward, as well as for its current meaning. Elections were held with appropriate ceremonies each night, and there were frequent changes in office holders. By making such changes we hoped to prevent abuse. However, as we have always found in organizations, the G-Men soon engaged in aggressive and abusive acts against other children, always for "bad" behavior on the part of the other children, which they undoubtedly saw as their own "bad" behavior justly punished. Schilder and I⁴ in our studies on aggression in children have shown the same concept in the child who says he wants to be a G-Man (in the usual sense) so he can catch and kill the gangsters, which is right, in his opinion, because "the gangsters are bad and kill good people."

ACTIVITIES DEVISED TO RELIEVE ANXIETY, GUILT, AND GIVE FREE EXPRESSION FOR AGGRESSION AND AFFECTION.

With these things in mind it is quite obvious that the children need some sort of group experiences whereby they can express their aggression without feeling guilty for it, and otherwise be relieved of their many negative emotional attitudes of guilt, anxiety, apprehension, uneasiness, inferiority and insecurity. It is known that this is partly possible through active play, sports, the more active forms of shop work, useful employment, school work, reading of properly chosen books, study of the body, etc. Such activities are probably sufficient for normal children. For groups of behavior problems we have attempted some organized activities which more definitely attack this problem because they specifically emphasize interrelation of psychological mechanisms. These activities include the use of our puppet, art and music projects, which are proving to be most useful in this type as well as other types of group and individual therapy.

PUPPET PROJECT.

The puppet work has already been reported by Woltman and myself.⁹ Here I want only to say briefly that by means of puppet

shows we are able to present all the problems of childhood to the child in the form of problem plays by the puppets. There is also some form of expression of love between the different characters in each play which the child identifies with different members of his own family. We have found that the value of our puppet work lies in the fact that every character is identified by the child with himself, or some part of himself, or one of his parents, or some part of them, or a sibling. Thus Casper, the hero, is the child himself, the part that we may call the ego, while Charlie, the monkey, is the more primitive part of the child, or what we might call the id. The bad boy in the play is the "bad" part of the child himself. The baby sister is both the sibling and the baby part of the child in his relationship to the mother. The policeman is the "good" father. The giant, the wizard, etc., are in turn the "bad" father; the witch is the "bad" mother; the much-hated and feared alligator represents oral aggression both by the child and against him. With such an array of characters we are able to present plays before the children which deal with every type of problem which concerns children, especially the various satisfactory and unsatisfactory relationships within the family life, and we are able to offer solutions for them. The children enter freely into the spirit of the plays, advising or reviling or encouraging the different characters. This gives them an excellent chance to express their aggression openly without fear of punishment, without any need for feeling guilty, and with the encouragement of 50 other children about them and the approval of the adult staff members in the audience. The alligator and the bad characters have to be attacked and killed many times. In the end there should always be some expression of love between Casper and the good characters. Group discussions on the various problems which are brought out in the puppet play have been most successful in getting expressions on all problems both of aggression and love. All sorts of problems can be discussed in terms of Casper, with whom the child freely identifies himself. Furthermore, this can be done by the puppeteer, assuming that he is properly chosen under the psychiatrist's supervision. Also, the puppet shows are an excellent source of material for the physician to use in individual treatment. They may be used as dream material if used. The child never retells the show as it is produced,

but modifies it in the telling to suit his own emotional problems. Furthermore, the puppet classroom affords an excellent shop room for the child to utilize any material, from clay to the actual production of a show by the child himself, with which to express his problems.

MUSIC PROJECT.*

Our music classes are also of great value. We have three classes which meet four times a week. One class is composed of children in early adolescence, one of children approaching adolescence, and one of the smaller children. The music staff consists of two musicians; one a pianist for the accompaniment, and the other a singer and teacher. Our work consists largely of group singing, a rhythm band and singing games for the smaller children.

From a point of view of group treatment and of socializing of children, this activity is found to be most valuable for the younger children. These children are just passing from childhood into the latency stage, and are making the transfer badly. Their difficulties are usually due to constitutional inferiority, hyperkinesis, deprivation of adequate maternal care and affection, or other neurotic factors which tend to keep them infantile, and unwilling to accept the schoolroom situation, to make any new attachments, or to develop those functions of physical or intellectual, or emotional or social interest, which characterize the latency stage.

The rhythm band is of special value. The fascination of the instruments, the noise making, the aggressive-like activity in beating or pounding the instruments, and the contagious rhythm win them over very quickly. They are thus beguiled into a type of training under a sympathetic "mother" which gives them a pattern for activities and a sense of accomplishment and satisfaction. Furthermore, they inadvertently accept the group or social situation. Only after success in the rhythm band will many of the more difficult children enter into the singing of the songs, and gradually carry over what they have experienced in the music class into the schoolroom and other activities.

* This project and the following discussion have been accomplished with the aid of Miss Susan Steel.

The music activities appear to be one of the most valuable means of training the hyperkinetic child whose main problems are of direction and attention, concentration, motivation, goal attainment and patterning of impulses. The fundamental almost primitive organic nature of the disturbance in the hyperkinetic child, which resolves itself into an overflow of motor-sensory behavior, best adapts itself to the primitive rhythm of the band which involves an organically patterned motor-sensory gestalt and also social relationship with a leader and produces a social accomplishment. The rhythm band gives the child opportunity to experiment with movement, form, and often in time and space, both individually and in groups, such as Schilder¹⁰ and I have shown is one of the fundamental features in spontaneous play of children.

For the self-conscious, growing child with awkward motility and strong feelings of inferiority, the music class combined with rhythmic games or dancing, have their obvious value. Now that we recognize how close to the emotional state and the ideation of the child the motility is related, it is clear that all must be treated together with a conscious effort at integrating the motility with the emotions, the expression, the complexes and the concepts.

Besides this carefully supervised and well taught music project where the children learn to perform and enjoy the best music within their reach, they have an amateur hour in the evening under the guidance of the nurses, during which they are allowed and encouraged to demonstrate any impulse to sing, dance, tell stories or otherwise "show off" under the guise of an "audition." Many of our children being negro children, considerable native ability is often shown. Every child is encouraged to take part and many a child learns to sing and dance spontaneously without adult direction. Popular songs and dances and love songs are not scorned. As long as the group does not include any over-sophisticated adolescent child, there is nothing performed by the children which is not of value to them.

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THE ART PROJECT.

We have an artist * who encourages and advises the children in their art work. A good deal of the time he is carrying on his own

* Mr. Bernard Saunders.

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work, sometimes using the children as models. The children are not instructed in art in the old schoolroom method, but encouraged to do what they can. From this has come an untold wealth of valuable production both for the psychiatrist and even for the art lover. The value of this work in relation to therapy has been reported.¹¹ The drawings of our few schizophrenic children, for instance, provide excellent study in narcissism and reveal the capacity of the child to detach one function from the personality as a whole. They also show the destructive forces of the schizophrenic process in the personality development and are a permanent record of each child, of the progress of his mental disturbances, and of the value of an activity such as our art classes in occupying an otherwise preoccupied child and allowing him to be part of a social group and productive of socially valued creations. The art work also gives the child an opportunity to experiment with motor-sensory patterns involving space, form and color.

Art often offers a contact with a child who otherwise may be unable to express himself to the physician for reasons either of language inadequacy or of emotional blocking. Once the contact is made, the art productions afford an excellent means of expressing and revealing the unconscious life of the child, his emotional conflicts and his fantasy life which lies so much nearer the surface than in the adult. The use of drawing in the psychotherapy of children has already been described by John Levy,¹² Appel¹³ and Liss.¹⁴ It is not permissible for the child to play the gangster and beat up the other children on the ward. Nor is it permissible for him to lie daydreaming his aggressive fantasies, but he may draw pictures expressing all forms of aggressive fantasies, in this way satisfying his drives and at the same time producing interesting pictures which immediately become public property. The pictures are not only studied and admired by the artist and the psychiatrist, and presented to groups of medical students, but they are looked at by the other children and copied by them. The other children thereby experience the same fantasies and get some of the satisfaction of a form of expression for the normal aggressive drives, without suffering from guilt or harming other persons. Some children have been successfully treated for excessive aggressiveness by allowing them to tell a story a day, involving fantastic violence and aggression, and illustrating the story with a gory picture of

someone being murdered. The telling of such stories fantasied by one child, to the other children, must presumably have an equally useful psychotherapeutic value on the others, although no effort is necessarily made to give an interpretation to any of them. It becomes simply a group experience in expressing unconscious fantasies with social approval. This is undoubtedly art and story-telling at their most human level and can never be better justified. What would otherwise be socially unacceptable behavior and grounds for punishment, and for feelings of guilt, anxiety and apprehension, become socially approved and a positive emotional experience.

SCHOOLROOM ACTIVITIES.

The schoolroom may be used for a type of group therapy that cannot be over-evaluated. We have two group divisions. One teacher handles the younger children of first to fourth grade. Actually, we find that most of the children in this group fall into the first and second grades and that a reorganization of our classes with another teacher would allow for this natural division. This group consists of young children who have not made the necessary social adaptations to the schoolroom because they are handicapped by mental deficiency, by a specific reading disability or speech, by a hearing or visual defect, or by neurotic problems which make it hard for them to give up their babyhood and enter into the group demands of the so-called latency period. The group also includes a number of hyperkinetic children who are under observation to determine if the hyperkinesis is controllable. Here I would like to mention only two of the functions of this teacher. The first consists of enticing the child to experience the satisfaction of learning. The thrill and joy of the child who is first learning to read has not been sufficiently emphasized. To have seen a child safely through this experience is to see him through one of the critical periods of his life. However, the child who finds himself in a classroom with other children who are having this experience, and who cannot get it himself, is doubly distressed by his own lack of joy, his failure to become one of the group and his overwhelming feeling of inferiority. The reason for his inability is entitled to careful analysis and study.

The teacher's second function is to help the child become socialized to the schoolroom situation. The child must be helped to accept her not as a mother substitute who is attentive to him alone, but to share her with other children and recognize her as the guide in group activities. He must learn to accept the teacher as authority, to take part in group activities and learn to direct his impulses and drives in accordance with the group pattern. Many a child is brought to us because of his inability to give up the infantile rôle, to accept the group situation and learn to develop his intellectual and social functions—due, of course, to poor handling in the home before he went to school. But if he at least can be happy in the schoolroom and see in his teacher the adult who ministers to his needs with pleasure in doing so, he has something to compensate him for home inadequacies. Severe disabilities should be tutored outside of the class, but the child should rejoin the class to demonstrate his accomplishments and to take part in other activities.

The teacher who handles the older children from fifth to eighth grades inclusive, has a different type of problem. She must constantly readjust her group interest to fit an ever-changing group of children with different needs, and yet make the group feel that it is working as a unit. Every child must get some sense of accomplishment and some sense of group adjustment. We organize the schoolroom work around a nucleus of common interest in some historical event. This involves geographical problems and the writing of compositions, etc., so that several children of even different grade placements can be organized in a common problem, but do work of value for their own level of accomplishment. It has been our experience that the sense of class unity attained in the schoolroom often results in free and open discussion of the children's behavior and emotional problems. Furthermore, compositions are assigned on relevant subjects, as—"Once I had a dream that—," or "If I could invent a new world according to my own fantasy." Such compositions give the child a chance to express his fantasy life, and may become the subject of group discussions. In addition, the groups in this particular class are organized so that a schizoid or schizophrenic child works in a group of well-extraverted children. Problems are chosen to meet his accomplishments and the other children are used as a contrast. The inferior child is protected and stimulated. Every effort is made to use the school set-up to

bring special problems into real life. At the same time it is realized that the successful child must be up to par with the essentials of his school work; so the fundamental subjects, the three Rs, are not neglected, and where children are deficient in special subjects, other tutoring is arranged.

— GROUP DISCUSSIONS.

Our success with group therapy has led us to realize that there is an actual emotional advantage in group discussions where you have several children with similar problems (and most of the children do have similar problems). We have found that even the most intimate problems of the child are best discussed in groups. Our practice is comparable to the group therapy used by Schilder.¹⁵ A group of adolescent girls will actually discuss their sex problems, describe their own experiences, talk about masturbation, and ask more questions in groups than they will individually. Similarly, a group of boys will discuss every problem freely. The further advantage is that one shy, completely repressed child can be added to such a group and benefit by the experience and gradually start to take part. Children will talk of these things freely in each other's presence and to the physician if they understand that it will not be disapproved. Of course, such a group discussion is entirely different from encouraging children to tell on each other, especially in the absence of the other party for the purpose of finding a guilty party to be punished. Such relations are never followed by anything that could be interpreted as punishment.

GROUP PLAY TECHNIQUE.

Play technique with small children in groups also has some distinct advantages. Lately, I had a group of three boys from six to eight years old. One was a stammerer who had been made neurotic and unhappy by a mother who thought his stammering was due to masturbation. A second child had a habit tic and was full of phobias and fearful fantasies. The third was a mute blocked child, whose father was insane but had escaped from the hospital, and whose mother had terrified herself and this child with fears of the father's return to the home. The advantages of placing the three children around the table to talk freely and later to play with

the toys used in play technique could not be anticipated until it was tried. Children being ruthless in regard to each other, tell what they think about the other. Each child was jibed by the others on his peculiarity, which made it possible to discuss these things freely and laugh over them and let the tormented child understand that the physician sympathized with him against the cruelty of the group. Children have an uncanny intuition for touching the weak points of other children. The two talkative children in this group actually said of the mute, fearful child that maybe he was crazy. Since the child's real problem was an insane father, this accusation caused him to flush with anguish, and yet this was undoubtedly the type of comment this boy had to listen to when he was alone with playmates. It opened the way, however, to talk about crazy people and what one would do if one had a crazy father, how one would protect one's mother from the crazy father, and whether one was likely to get crazy oneself. The stammering child was jibed for the way he talked. He said his mother told him it was because he played with himself. Thereupon, the boy with the tic and phobias, looked interested and said he did that to^o and that the "mummy with the big eyes" came through the window after him when he did it. We talked about masturbation, whether a mother could ever be mistaken when she believed that a boy was playing with himself, and whether "mummies" were real. There is clearly almost no limit to the usefulness of such group activity. The group or social situation, instead of detracting from the value of the treatment, adds a new factor consisting of freer and more fertile associations and better catharsis. It also affords the opportunity of experiencing the emotions of the other persons, and finding that one's own experiences have social value.

GROUP TREATMENT IN STAFF OF STUDENT CONFERENCES.

Finally, an excellent method of group therapy consists of presenting children before groups of medical students or nurses. In this method, the children are chosen for the similarity of their problems, but with different factors and reactions. The children should be allowed to be present during the discussion with the students. When it is realized that one of the main problems in dealing with children is to relieve the child of his overwhelming

sense of guilt, the value of such conferences becomes evident. One conference on "The Delinquent Boy" centered around eight young boys who were sent to us for delinquency, mostly for running away from home and the associated stealing. These boys, as Children's Court cases, considered themselves threatened with reform school and all that it entails. The group discussion on the cause of delinquency in boys from the psychiatric point of view, and the presentation of each boy before the group was perfectly convincing to the children. Even when they could not see their own problems in any perspective, they could see those of the other seven boys, and they could understand what was of value to them from the lecture. A similar conference on a group of children with sibling rivalry was of equal value to the children. The same can be said of almost every problem which confronts children.

CONCLUSIONS.

A children's ward which is used for the observation and treatment of behavior disturbances has its own group psychology determined by the psychology of the children that constitute the group and group phenomena. Groups with behavior problems such as we have at the Psychiatric Division of Bellevue consist of neurotic, hyperkinetic and psychotic children. The majority are usually neurotic behavior problems involving (1) fear and apprehension growing out of insecurity in family relationships accompanied by inadequate or unsuitable expressions of love, and (2) anxiety and guilt because of their behavior difficulties which mostly relate to aggression, sex problems and the attaining of personal satisfactions. The hyperkinetic child tends to increase the anxiety of the group by his open display of aggression, which demands retaliation and defensive behavior on the part of the group. The unrestrained sex play and the frank bids for attention and affection on the part of the hyperkinetic child also increase the anxiety of the group. The occasional psychotic child tends further to increase the anxiety of the group by his open sex play and his bizarre behavior, which the other children may believe is the result of masturbation. These situations give rise to emotional crises in the spontaneous organizations in the group. These crises may be revolts against authority, in which case the apprehension and fear of the children can be

allayed by individual and group assurances that the staff is essentially concerned with the problems of reestablishing the child in the family group most suitable for him, and that it is able to accomplish this. Group revolts are best handled in groups. The crises may be group demonstrations consciously or unconsciously organized on mutual feelings of guilt and anxiety. They may be directed against some unrestrained or hyperkinetic child who receives the whole of the children's guilt, punishment and hatred. Efforts to supervise organizations on the ward similar to the monitor system or the Scout movement tend to be utilized to relieve the child's guilt by punishment of a scapegoat. Such phenomena must be recognized and substitutes offered, and this is best done with group activities. The staff personnel must understand the psychology of the group and be encouraged to allow and give a free expression of affection and reassurance to replace aggression, anxiety and fear. The routine of the ward activities should be based upon the needs of the growing child and the normal organic rhythms of the child and the environment. Such a routine is of fundamental importance as a normal rhythmic pattern; it gives the children a sense of security, of accomplishment, and reduces the need for aggressive discipline from the staff. Some group activities are especially adapted to allow free expression of aggression or affection and the resolution of emotional complexes. These include the puppet projects and the art projects. Many others should be devised. The value of supervised play and shop work has long been recognized as a means of expression of aggression and competition. Experiences of personal accomplishment in the various classrooms recognized by the group standards, compensate or eliminate feelings of inadequacy and guilt. Opportunities for group experiences of rhythmic patterns in perceptual motor and emotional fields are provided by the music classes. Group therapy in group discussions, group play technique and staff and student conferences have positive advantages where behavior difficulties have similar origins, as they usually do in children. Group expression is freer and encourages the individual child to find relief from his anxieties and fears by the sharing of mutual experiences and by the conviction of social approval. The group psychology adds a definite quality which may tend to increase or diminish anxiety and fear, depending upon the control of the situation by the psychiatrist. Intensive individual

treatment, where it is indicated, progresses more rapidly on the background of organized group interests.

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DISCUSSION.

DR. FORREST N. ANDERSON (Los Angeles, Calif.).—There are so many points I shall take just a moment to comment on a couple of them. My experience has been as a psychiatrist in a child guidance clinic, and therefore with very limited opportunity to work with groups. I have gradually

developed an increasing conviction, however, that quite a percentage of cases of which we hear might be better handled in a group method; and the description and discussion that is given here increases me in that conviction. In this working with their peers, undoubtedly a great many of the affectional ties and relationships are worked out in a way that I wonder what we can do, as adults, with the children, in our present limited state of knowledge of behavior.

I am especially impressed, however, with the fact that it is the character of the personnel that is probably of more importance. In a traditional or orthodox child guidance clinic we have come to feel more and more that the arbitrary division of the case, where one person does certain technical work, is in many cases not nearly as desirable as using the basic personality or capacities of the individual to work with the children, and with the parents, in the way that they are best fitted. We have developed a great deal more fluidity in the approach. And it seems to me that in this group work, a great deal, as the writer has suggested, does depend upon the personality, the emotional clicking of the children with the one who is heading it up, and makes less difference, whether it is the psychiatrist, counselor, or teacher, or just who.

I was a little bit disappointed that Dr. Bender had not found as much value in the spontaneous group developing organization of the children, as I had hoped.

Just one other point. I have seen something of the great results that are sometimes obtained when a child will be placed either with a convalescent group under the hands of an experienced person, or in a normal class group, wherein the leader has succeeded in developing a friendly, interested relationship on the part of the children so that the other children will take the one child, who presents the behavior problem, under their wing and give a protective, self-developing attitude.

DR. MATTHEW MOLITCH (State Home for Boys, Jamesburg, N. J.).—At the State Home for Boys, where we have over 500 children, with a great deal of group activity, we have come to the conclusion that it may be that individual care in many of these children would be more beneficial. Those in child guidance clinics who do not have the opportunity for group care, feel that group care in many of their cases would be more helpful, while those of us who have group activity would like to have more individual care.

In our institution we have nearly a hundred different group activities. We have everything that Dr. Bender mentioned, except the puppet shows. We find that about 10 per cent of our population are unable to get along in group activity, that is, they are a misfit in any group. We also find that about half of this number can be adjusted by shifting them around among different groups, probably changing their work, school or hobby clubs. The other half of the 10 per cent, which is about 25 or 30 boys, we find best to segregate in a separate unit away from the institution entirely. We find this group, who are unable to get along with the various so-called normal

children are able to get along among themselves, providing we do not have group activity. That is, we have an individual program for each one of those 25, except in athletic contests, where they are allowed to choose their own sides.

We keep our children from one to three years, an average of about a year and a half, and we feel in many of these cases we would like to keep them longer, but we always fear institutionalization. We find that we are able to improve over half of our children so that they do not have to come back to our institution or to other institutions, and it takes us about 18 months to do it.

I would like to ask Dr. Bender how much could be accomplished in the period of 30 days, which is the average stay of their children, and if any follow-up work has been done with these children. We could tell a lot about our techniques and hobbies, but we are anxious to know what happens to our children after they leave; whether our therapy was effective, and whether changes are necessary because of the after life of the child.

Dr. Arnold W. Hackfield (Seattle, Wash.).—I was glad to hear the paper of Dr. Bender, because I have been interested in group treatment for the last two and a half years. Analogous to the work of Moreno, her work shows that in our approach to mental hygiene we must turn away from the individual to the group. We must create for maladjusted children an opportunity which they do not have in the home.

In Seattle—where we do not have the same facilities as in the East—I was confronted with several hundred of these cases as consultant to the Washington Society for Mental Hygiene and I had to devise some means of dealing with these children. I developed the following approach. I organized the parents of these children for group treatment and taught them the mechanisms involved in the readjustment of children so that when these children went back home they were given opportunities for expression.

As Dr. Molitch brought out, I think the study of Dr. Bender proves that 30 days is not sufficient to rehabilitate the children, although something can be accomplished. We have gone one step further and are introducing a course of mental hygiene in the public schools of Tacoma, Washington. How this will work out we do not know, but at least it is an attempt in the right direction. I think that this approach is preferable to individual therapy in the solving of behavior problems.

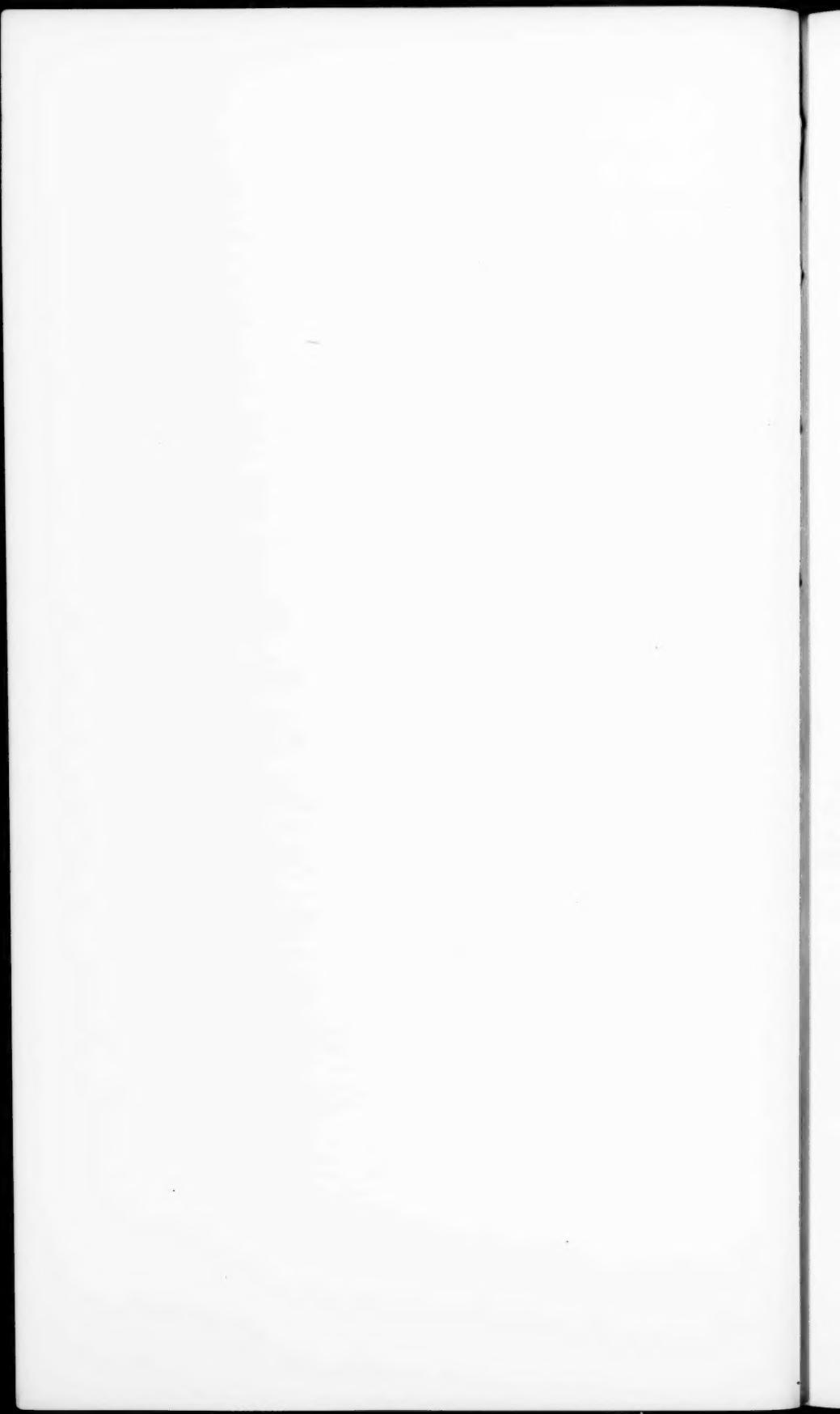
DR. LAURETTA BENDER (New York City).—I very much appreciate the remarks the discussants have made, which have been helpful throughout. Dr. Anderson's emphasis upon the value of group therapy from the point of view of working out affectional ties and relationship, of course, is one of the most important factors, and it cannot be done well by a close relationship between the children and one individual, but must work itself out in groups.

His comment that I had not emphasized the good effects of spontaneous organization among the children was helpful to me because I realize we

have had many organizations on the ward which have been useful and good, but one is prone to overlook the good things and remember the bad ones. It has often happened, for instance, that the schizoid child has been accepted by the children and a definite organized effort made among the children to help such a child; the children will often protect and shield the smaller ones. Often we get one child more mature, a boy in the group, who will be definitely a leader for the other boys, and one girl to be a mother for the younger children.

In response to Dr. Molitch's discussion I want to emphasize that in group psychotherapy it is not alone the group activities, but the use of group activities for conscious interpretive psychotherapy, which makes it possible for us to accomplish something for our children in the short time they stay with us. As a city hospital we are not allowed to keep a patient over 30 days. I know that is often not long enough. What happens is this; a child does not get the treatment he needs in 30 days, and if he is sent out he comes back to us the second and third time. Others are sent to institutions like Dr. Molitch's, and he has to take care of them. Others come to us from child placing agencies like the Gould Foundation, with the full knowledge of what we are able to do in 30 days, and go back in the home or institution or public schools with our recommendations, and it is reported to us that many of the children have benefited. So far, however, I do not have an official follow-up study.

I appreciate Dr. Hackfield's emphasis on the value of group treatment as he has found it in Seattle, and I am quite convinced myself that group treatment is not only the most economic way but is the correct way, because the children of the latency period are essentially social beings and their problems are social problems, and they can be handled better in groups.



ENDOCRINE DISTURBANCES IN BEHAVIOR PROBLEMS.*

By MATTHEW MOLITCH, M. D., JAMESBURG, N. J.

A group of 269 boys, between the ages of 9 and 17, with endocrine disorders were studied in detail at the New Jersey State Home for Boys. The results were correlated with mental level, school achievement, behavior and personality. The incidence of endocrine disorders is about 25 per cent of the resident population, and the total number mentioned above represents an accumulation of almost four years. A review of the literature by Gordon and Kuskin¹ showed that the incidence of endocrine disorders ranges from 2.4 to 82 per cent, so that our figure is well on the conservative side. Only those with conclusive physical or laboratory findings were included in our group, and no child was included just because he was mentally retarded.²

Table I gives the distribution of the cases according to diagnoses. The children with pituitary disorders represent about half the total group. Fröhlich's Syndrome or adiposogenitalism is uncommon in our age group while cases of hyperthyroidism have not as yet been received in our institution. It is not practical in this paper to give the diagnostic details of the various diagnoses, and the reader is referred to any standard text-book, such as Englebach's *Endocrine Medicine*, to the rapidly growing literature, and to the publications of the author.^{3, 4, 5}

As a short summary, it may be stated that the hypopituitarisms are the short, proportionately developed children whose sexual development, both primary and secondary, is retarded. The hyperpituitarisms are the proportionately developed giants whose external features and internal organs are also enlarged. The Fröhlich's or adiposogenitalisms are the fat children with small genitals. Their height is usually normal for their age but they may even be too

* Read at the 92d annual meeting of The American Psychiatric Association, St. Louis, Mo., May 4-8, 1936.

From the Department of Neurology, Medical School, University of Pennsylvania and the New Jersey State Home for Boys.

TABLE I.
DISTRIBUTION AND MENTAL LEVELS * OF BOYS WITH ENDOCRINE DISORDERS.

Diagnosis,	Total.		Average.		Inferior.		Mental levels.*		Subnormal.	
	No.	Percentage.	No.	Percentage.	No.	Percentage.	No.	Percentage.	No.	Percentage.
Hypopituitarism	56	20.8	1.3	23.2	25	44.7	18	32.1		
Hyperpituitarism	65	24.2	2.4	36.9	23	35.4	18	27.7		
Adioposogenitalism	10	3.7	3	30.0	4	40.0	3	30.0		
Hypogonadism	36	13.7	1.1	30.5	14	38.9	11	30.5		
Hypergonadism	16	5.9	5	31.3	4	25.0	7	43.7		
Delayed secondary sexual development	50	18.5	1.3	26.0	23	46.0	14	28.0		
Undescended testes	12	4.5	5	40.7	6	50.0	1	8.3		
Hypothyroidism	24	8.9	8	33.3	7	29.2	9	37.5		
Total	269	100.0	8.2	30.5	106	39.4	81	30.1		

* The average for the population as a whole is 28 per cent average normal, 39 per cent inferior normal and 33 per cent subnormal or feeble-minded.

tall for their age. The hypogonadisms are the tall, thin children whose genital organs are infantile and the secretions from their gonads insufficient. Their height is due to a prolonged growth because of the absence of the inhibiting influence of the sex hormones. They are distinguished from the hyperpituitary giants in that they are thin and have long extremities. The children with hypergonadism are heavy-built, like wrestlers, with excessive genital development. They grow rapidly in early life but stop around the age of 14 or 15 because of their early sexual maturity.

The children who show no evidences of secondary sexual development are grouped together because they are within the normal limits of height. As these children grow older they either mature sexually or fall in with the hypopituitarisms or hypogonadisms. The above group probably represents varying degrees of sex hormone deficiency with a subsequent imbalance of the growth and sex hormone ratio. Those with undescended testes are considered separately although they usually are characterized by a retarded secondary sexual development. Those with unilateral cryptorchidism may have a normal sexual development, both primary and secondary. The diagnosis of hypothyroidism was made exclusively on those with retarded bone development.* This is a subclinical type of hypothyroidism and does not include the cretins or those with myxedema. We have never had a case of hyperthyroidism and therefore the diagnosis of this type is omitted.

INTELLIGENCE.

The findings of general mental level for this group were made by A. K. Eccles and Marian Derrick in the following manner: Upon admission each of these inmates was given a psychological examination including one of the following tests: Stanford revision of the Binet; Kuhlmann-Anderson; Morgan's mental test A or B; also the mirror drawing test, dynamometer for strength of grip, and the Witmer form board. In addition to these, one or more, usually about three, of the following performance tests were given: Healy picture completion II, Porteus maze; Stenquist assembly I; Stenquist mechanical aptitude I; Knox cube.

We did not consider it practical to use intelligence quotients because of the differences in the tests employed and the consequent

incomparability of the quotients obtained. Other factors were the differences in nationality and color and the debatable question as to whether intelligence quotients are sufficiently constant to warrant comparison in this type of data for different ages, and still further because of the uncertainty of the upper life-age limit for calculating quotients. Our inferior normals range from 75 to 90 in their intelligence quotients.

For the entire group of 269 boys, it is seen from Table 1 that there is little difference in intelligence between the children with endocrine disorders and the institution population as a whole. Our findings are almost similar to those of Gordon and Kuskin¹ who found about 29 per cent of their children with endocrine disorders to have an I. Q. below 75. Individually the most striking thing noted is the very few feeble-minded among the children with undescended testes, and the increase in the number of feeble-minded among those with hypergonadism and hypothyroidism. The hypopituitarisms had fewer average normals and more inferior normals. The remainder had slightly less feeble-minded than is generally found in our population as a whole.

SCHOOL ACHIEVEMENT.

Every boy on admission was given a Stanford achievement test and the results, as measured in years retarded and the scatter in individual subjects, were not different from those of the other boys in our population. There was a slightly higher incidence of truancy and misbehavior in the school, but not to such an extent as to be especially outstanding. The children with undescended testes, who were the brightest of all the boys with endocrine disorders, were the most serious truant and school problems. Their results in the Stanford achievement test were among the worst, not because of the lack of ability, but because of the lack of school attendance.

BEHAVIOR.

As all of our boys were committed because of overt acts it is difficult to set up a behavior pattern for the children with endocrine disorders. A detailed analysis was made of the entire group and the incidence of truancy, larceny, sex offences and wanderlust was in the same proportion as in the institution population as a whole.

PERSONALITY.

Our boys with endocrine disorders are described in more negative terms than the other children in the institution. Such terms as unstable, suggestible, immature, infantile, emotional, unreliable, neurotic, lazy, dull, apathetic, loquacious, etc., are used. These terms are by no means used exclusively in our "endocrines," and are not characteristic of any particular endocrine dysfunction. The children with hypogonadism received the most positive characterizations while the boys with undescended testes and hyperpituitarism received the most negative characterizations. For the past four years, about 11.6 per cent of our resident population were parole violators while over 17 per cent of our endocrines were violators. There is nothing distinctive in the behavior of any one of the groups of endocrines which could be used as an aid in diagnosis.

TREATMENT.

We were able to treat successfully the children with undescended testes⁴ and the hypopituitary dwarfs⁵ with active preparations.* Physical improvement was noted in almost every case, but no change was noted in the intelligence or personality of the child. It may be that the treatment should have been carried on for a period of years rather than months, in order to improve the intelligence or change the personality. Gordon, Kuskin and Avin⁷ were able to improve about 45 per cent of their group with continued treatment. Marinus and Kimball⁸ noted improvement in 70 to 80 per cent of their large group, while Lurie⁹ obtained almost as great an improvement in children with pituitary dysfunctions.

SUMMARY.

A group of 269 boys with endocrine disorders were studied in detail and the findings were correlated with intelligence, school achievement, behavior and personality.

* Growth hormone and anterior pituitary-like hormone (Follutein) supplied through the courtesy of Dr. J. A. Morrell of E. R. Squibb & Sons.

CONCLUSIONS.

1. About 25 per cent of the resident population, of over 500 boys, were found to have endocrine disorders. The presence of such a large number warrants further study, as there may be a relationship between their overt behavior and the abnormal endocrine function.
2. As a group the children with endocrine disorders are not more retarded in intelligence than the remainder of the population. The boys with undescended testes are brighter, while those with hypergonadism and hypothyroidism are more retarded than the control group.
3. There was present a slightly higher incidence of truancy amongst the group, especially those with undescended testes.
4. The offenses which causes their commitment to an institution were not different from those of the boys in the control group.
5. The children with endocrine disorders were characterized more negatively than the control group, with the boys who had undescended testes being the most unstable and troublesome.
6. Further study is urgently needed especially in the field of treatment with more potent preparations.

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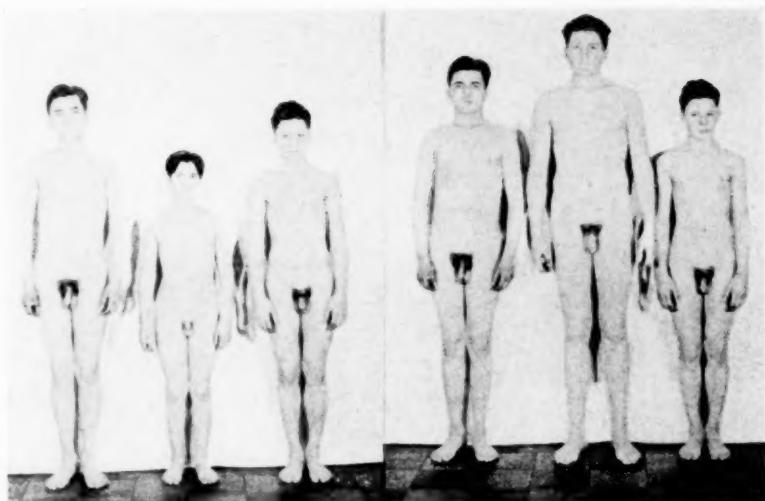


FIG. 1.—The boy in the middle on the left is a hypopituitary dwarf while the boy in the middle on the right is a hyperpituitary giant. The boys on either side are normal controls and both patients are 15 years of age.

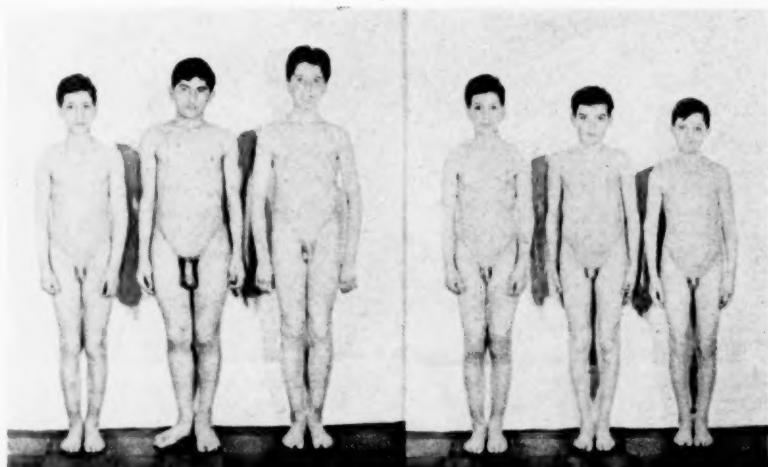


FIG. 2.—The boy in the middle on the left has hypergonadism while the boy in the middle on the right has hypothyroidism. The boys on either side are normal controls.

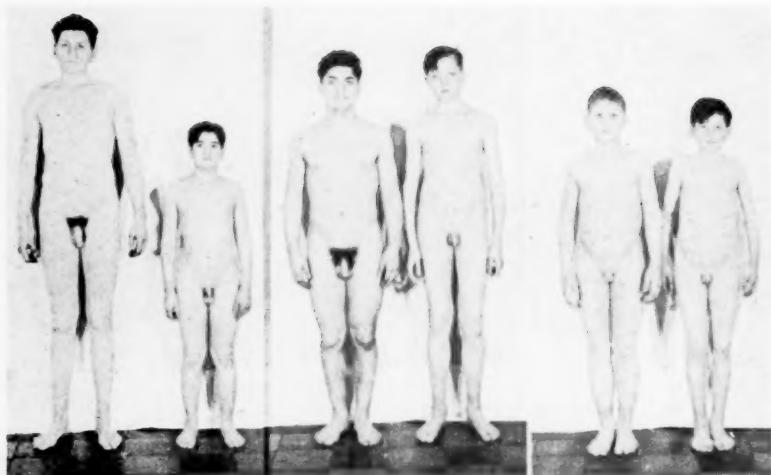


FIG. 3.—The two boys on the left give a contrast of a dwarf and a giant of pituitary origin. They are both of the same age. The two boys in the center picture give a contrast of hypergonadism and hypogonadism. The two boys in the picture on the right have hypothyroidism and undescended testes, the boy on the extreme right being cryptorchid. All three of the boys with decreased function (hypopituitary, hypogonad, hypothyroid and cryptorchidism) show absence of secondary sexual development.

STUDIES IN ENDOCRINE THERAPY IN EPILEPSY.*

SECOND REPORT.

By CALVERT STEIN, M. D.,
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I. EXPLANATION.

The studies in endocrine therapy in epilepsy which were begun at the Monson State Hospital in October, 1931, were brought to a close in September, 1935. In a previous report¹ a review of the literature and a detailed account of the purpose, procedure, observations and results to October, 1933, were presented. The present report serves to complete the picture as far as it concerns observations on the ultimate effect of selected endocrine therapy upon the record of seizures and the health of 12 of the original 68 epileptics who have been carried along in the study. Desiccated thyroid extract, and in some cases whole pituitary substance, by mouth, furnished the bulk of the medication used in these cases; and constituted the only medication in use since the last report.²

A table of the important data on these 13 cases is presented below (Section II) listing the changes in the convulsive rates during four periods which are described in Section III.

III. EXPLANATION OF TABLE.

First Period.—8 to 32 months before treatment began.

Second Period.—4 to 14 months during endocrine treatment, but with a change in the dosage of phenobarbital (usually with moder-

* Read by title at the ninety-second annual meeting of The American Psychiatric Association, Section on Convulsive Disorders, St. Louis, Mo., May 4-8, 1936.

¹ Studies in Endocrine Therapy in Epilepsy, Stein, C., Am. J. Psychiat., 90: 739 (Jan.), 1934.

² Thyracoids and whole pituitary used throughout the four years of study were furnished through the courtesy of Dr. H. S. Bakel and the research laboratories of Reed & Carnrick, Jersey City, N. J. (For details of other medication used during the first year of the study, see previous report.)

II. TABLE OF EFFECT OF ENDOCRINE THERAPY ON SEIZURES OF TWELVE EPILEPTICS.

Case Identification.	1.		2.		3.		4.		5.	
	Period I, before treat- ment was begun.	Period II, during treatment (change of phenobarbital).	Period III, during treatment but with original phenobarbital.	Period IV, since treatment (original phenobarbital).	Per cent of change (Period I- III).	No. seiz. mos. mo.	Ave. seiz. mos. mo.	No. seiz. mos. mo.	Ave. seiz. mos. mo.	No. seiz. mos. mo.
1 5-J.B. 5049	8	1.4	8	1.0	5	0.8	7 (1934)	1.0	0.8	Per cent -43
2 7-A.B. 5632	8	1.9	6	0.5	8	2.0	8	0.9	+5	Generally better while on treatment despite slight increase in seizures. Gained weight. Phenobarbital increased from $\frac{1}{2}$ gr. at night during Period I to $\frac{1}{2}$ gr. t.i.d. during Period II.
3 20-F.D. 5817	32	4.8	Phenobarbital discontinued after the 1st year.	32	0.6	1.4	1.8	-87	One grain phenobarbital daily before treatment and during first year of treatment was discontinued entirely. Better without it. Reduction in obesity, improvement in facial acne, and constipation relieved while on treatment.	
4 28-A.H. 783	16	1.2	15 (1933)	1.9	3	1.0	8 (1933)	1.6	-13	Generally better (except for seizures) during treatment. Phenobarbital increased from 0 in Period I to $\frac{1}{2}$ q.i.d. in Period II, during which seizures increased. Seizures about the same in Period III as in Period I. In Period IV, had fewer seizures during three months without phenobarbital than in the eight months with it.
5 57-A.H. 6324	15	0.7	No change	15	0.3	1.3	0.1	-57	No change in phenobarbital. Generally improved. 21 consecutive months without seizures—September, 1933, to May, 1935, inclusive.	
6 29-J.H. 5612	24	3.6	No change	24	3.1	7	6.1	-14	Decrease in weight. Slight decrease in seizures. No change in phenobarbital. Seizures and weight have increased promptly since treatment was discontinued.	
7 69-M.O. 6263	12	35.1	12	7.7	6	32.5	8	10.0	-7	Slight decrease—main benefit from doubling dosage of phenobarbital from $\frac{1}{2}$ gr. t.i.d. to 1 gr. t.i.d. Fewer grand mal seizures while on treatment—though bulk is still petit mal.
8 70-M.R. 6090	12	38.3	4	1.3	7	7.3	9	7.6	-81	Pronounced general improvement. Phenobarbital increased from $\frac{1}{2}$ gr. b.i.d. during Period I to $\frac{1}{2}$ gr. t.i.d. during Period II. Improvement continued for several months after cessation of medication.
9 50-D.S. 4609	14	4.6	14	5.7	8	5.8	8	3.6	+20	Phenobarbital increased from none to 1 gr. t.i.d. during Period II. Seizures increased during Periods II and III, despite phenobarbital during Period II—and have diminished during Period IV while off all treatment—considerable reduction in weight. Apparently better off without medication.
10 52-G.S. 5837	11	7.9	11	9.8	8	16.2	8	2.3	+105	Seizures increased despite increase of phenobarbital from $\frac{1}{2}$ t.i.d. to 1 $\frac{1}{2}$ t.i.d. Seems better off without treatment, and with smaller doses of phenobarbital.
11 49-E.S. 5968	14	25.6	14	25.1	8	8.0	8	14.8	-68	Does better on original phenobarbital (1 gr. t.i.d.) which was raised to 1 $\frac{1}{2}$ gr. q.i.d. during Period II. Frequent attacks of status make results equivocal.
12 54-A.T. 2899	14	3.7	14	2.0	8	4.0	8	3.6	+8	General condition better. Phenobarbital increased from 0 to $\frac{1}{2}$ gr. t.i.d. for Period II. Diminution of seizures in Period II was doubtful due to increased phenobarbital, for the gain was not maintained during Period III when phenobarbital was discontinued. Period IV indicates improvement without any treatment.

ate increase), affecting nine of the cases. There was no change of phenobarbital in Cases Nos. 5—57 and 6—29; while in Cases Nos. 3—20, phenobarbital was discontinued after the first year.

Third Period.—3 to 24 months *during* endocrine treatment, but with a restoration of the original dosage of phenobarbital in the eight cases which had had their doses increased. (This period of observation was necessary to compare with the *Second Period*, and to offset the effects of the changes in phenobarbital, some of which changes had been necessitated by increased seizures.)

Fourth Period.—7 to 14 months on the original dosage of phenobarbital; but without any endocrine treatment—to observe the effects of discontinuation of the endocrine medication *per se*.

The inequality (and in some cases inadequacy) of these periods was caused by one or more of the following unavoidable factors: changes in the health or habits of the patients, absence during visits to their homes, status, intercurrent illness, and change of temperament. These changes were responsible for the ruling out of most of the other 56 cases.

IV. RESULTS.

Of the 12 cases, eight showed a decrease, and four showed an increase in the number of their seizures while under treatment.

The extent of change is best understood by a study of the table, (Column 5), where it can be seen that the degree of reduction varied from 7 to 87 per cent; while the increases were from 5 to 105 per cent. (Period III, *cf.* Period I.)

Since treatment was discontinued, nine cases have shown a decrease in the number of seizures, two have shown an increase and one remains unchanged (Cases 12—54). (Period IV, *cf.* Period III.)

In the previous report, no appreciable effect was noted on the seizures of the majority of the cases; while in many of them there was noted a general clinical improvement in nutrition, well-being, bowel-function, metabolism, weight and pulse rate. The present findings corroborate the latter portion of that statement; and, in addition, indicate that there is a slight to moderate reduction in the incidence of seizures—presumably due to a raising of the convulsive threshold—occurring in 8 of the 12 remaining cases which have been brought to some degree of completion in this study.

Does better on original phenobarbital (1 gr. t.i.d. which was raised to 1½ gr. q.i.d. during Period II). Frequent attacks of status made results equivocal.

General condition better. Phenobarbital increased from 0 to ½ gr. t.i.d. for Period II. Diminution of seizures in Period II was doubleless due to increased phenobarbital, for the gain was not maintained during Period III when phenobarbital was discontinued. Period IV indicates improvement without any treatment.

11	49—E.S. 5968	14	25.6	14	25.1	8	8.0	8	14.8	-68
12	54—A.T. 2899	14	25.1	8	25.1	14	3.7	14	2.0	+8

V. SUMMARY AND CONCLUSIONS.

1. Selective endocrine therapy, chiefly with thyroid extract and with desiccated whole pituitary body,² has been given to one male and 11 female epileptics for a period of 11 to 32 months here at the Monson State Hospital for epileptics in Massachusetts, beginning in October of 1931.

2. In a previous report a review of the literature was presented, together with a description of the purpose, procedure, observations and results to October, 1933. This report completes the present study and presents the results to March, 1935.

3. Unavoidable interference with the study by changes in the health, habits, temperament and program of many of the patients necessitated the elimination of 56 cases out of the original 68; while in the remaining 12, the study had to be divided into four periods of observation (Section III) in order to offset changes in phenobarbital.

4. Eight of the 12 completed cases showed a slight to moderate decrease, while four showed an increase, in the number of their seizures during treatment.

5. Shortening of the post-convulsive period of debility was observed in five of the cases; and in four cases there was a tendency towards a prolongation of the aura.

6. General improvement in the health (metabolism, pulse, weight, blood pressure and bowel habits) was noticed in the majority of the cases, as previously reported.

7. It is my impression that such improvement as has been observed is due largely to what Hoskins and Sleeper have termed the "thyroid factor,"³ *i. e.*, the thyroid content of the medication used; and that this is due less to any inherent defect in the thyroid gland itself than to the well known principle of the catalytic effect of this organ in stimulating the metabolism of the rest of the body.

8. The results of these studies indicate that in selected cases of epilepsy, thyroid medication, if carefully controlled, is of some value in improving the general health of the patient, and thereby raising the convulsive threshold.

² The Thyroid Factor in Dementia Praecox, Hoskins, R. G., and Sleeper, F. H., Am. J. Psychiat., 87: 411-429, Nov. 1930.

PSYCHIATRIC FACILITIES IN AND ABOUT PITTSBURGH.

By CORNELIUS C. WHOLEY, M.D.,

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The name of Pittsburgh is conspicuously associated in the minds of most people with big industry. Pioneer work in the development of steel, coal and electricity suggests the names of such men as Carnegie, Frick, Schwab and Westinghouse. Pittsburgh is still the great steel center of America. Its association with such vast industries has obscured the fact that this same pioneer spirit has found an outlet in the arts, the sciences and great philanthropies as well.

In this connection such names as Stephen Foster, Nevin, Brashaer (affectionately known as "Uncle John"), to say nothing of Andrew Mellon, come to mind. Phipps Psychiatric Clinic in Baltimore recalls the name of another of these industrial philanthropists. Many other names are prominent in Pittsburgh's roster of famous men.

But our story has to do with Pittsburgh's psychiatric history of earlier times and today. We find that the first hospital to care for the insane in the Pittsburgh District was The Dixmont Hospital. Its early history was intimately bound up with that of The Western Pennsylvania Hospital founded in 1847 by a group of representative citizens of Pittsburgh and vicinity, who met in Odeon Hall on Fourth Avenue for the purpose of founding a general hospital.

A constitution was drafted, one extract from which will serve to show the ideals as expressed by its founders:

Resolved, That in establishing a hospital we desire to make it a general one. We disclaim all sectarian preferences and cordially invite all of every sect and denomination to unite with us in founding one general hospital, which shall be worthy of our city and vicinity and the age in which we live.

So The Western Pennsylvania Hospital, one of the three oldest in this city, was incorporated March 18, 1848, and by 1850 work was started on the building, the site being a 22-acre plot at 28th

Street, which had been donated by Harmer Denny and Captain E. W. H. and Mrs. Schenley. In March, 1853, the erecting and furnishing of the building was completed. During the first year 172 medical and surgical patients and 26 *insane patients* were admitted. Within one year the number of charity patients, *particularly in the wards for the insane*, had increased to the point where it was necessary to seek aid from the state for maintenance of these unfortunates. The legislature in 1855 appropriated \$10,000, with the understanding that insane patients from a district comprising 21 counties in Western Pennsylvania should be admitted and receive treatment. The ever-increasing number of these patients soon overcrowded the hospital, thus making necessary the erection of a new building. On March 18, 1856, the legislature appropriated \$20,000 to construct a building to accommodate the insane, but a proviso in the act prevented the expenditure of the appropriation for a site.

At this juncture there occurred an incident which is perhaps the most significant historically in this sketch of Pittsburgh's psychiatric ancestry. I have in mind the distinction which fell to the founding of our first large hospital for the insane in its having been directed and mothered by that great personality, Dorothea Lynde Dix. She was then at the height of her fame as a humanitarian. She was solicited by Mr. John Harper, the then superintendent of The Western Pennsylvania Hospital to come to Pittsburgh to give her advice for a suitable location. Let me quote in this connection from one of her letters, written from Cleveland to a friend.* "I am here only for a few days, and proceed to Zelienople and thence to Pittsburgh, where I hope to complete what I have begun and advanced there. I have induced the managers of the proposed benevolent institution to sell the farm which had been purchased, and which is not well situated, and take a magnificent location for a hospital on a fine elevated site which I found on the Ohio River, eight miles from Pittsburgh and which is both salubrious and cheerful, joined with outlooks of rare beauty associated with some elements of grandeur." This tract was purchased and later enlarged to 355 acres. In honor of Miss Dix the place was named Dixmont and is the only institution she ever permitted to be associated with her own name.

* Tiffany's Life of Dorothea Lynde Dix, page 315.

Dixmont was opened for the reception of patients November 11, 1863, and 113 patients were transferred to it from The Western Pennsylvania Hospital in the twelfth ward of the city of Pittsburgh. The hospital is governed by a board of 15 directors. The actual management is vested in an executive committee chosen by the directors. During the history of the hospital it has had but nine presidents: Thomas Bakewell, John Harper, John A. Harper, Robert Pitcairn, William M. Kennedy, Charles C. Townsend, R. B. Mellon, James H. Reed, the position being occupied at the present time by the Honorable David A. Reed, a grandson of the former superintendent, Dr. Joseph A. Reed, and son of the former president James H. Reed.

The hospital has had but two superintendents. Dr. Joseph Allison Reed was chosen to that position in 1857 and continued in office until his death November 6, 1884, from which time the present genial and competent incumbent, Dr. Henry Hutchinson, has occupied the office. Quoting from a recent letter from Dr. Hutchinson, he speaks of the institution as being located "far up on the hill-side at Dixmont Station, surrounded by a tract of land of some 500 acres." And he goes on to speak of Dorothea Dix as "having made her home there in the family of the former superintendent for a period of 13 years. During that time Miss Dix visited the jails, penitentiaries, almshouses and institutions for the mentally ill all over the country, even going abroad on several occasions to pursue her work in other countries." Although this period of her life was filled with achievements of prison and asylum reform, Miss Dix left no record of her work at Dixmont. She was extremely averse to publicity and rebuffed every lure leading to worldly glory at the time.

The following items taken from Tiffany's *Life of Dorothea Lynde Dix* are of interest in connection with Pittsburgh's early psychiatric history: "The beginning of the nineteenth century saw in the whole United States but four insane asylums, of which one only had been entirely built by a state government. They were in order of their foundation, Philadelphia, Pa., 1753; Williamsburg, Va. (state asylum), 1773; New York, 1791; Baltimore Md., 1797. In 1813, attention was attracted to Tuke's work in England by certain Philadelphia Friends, who, collecting funds, opened in 1817 a hospital for the insane. . . . One year later witnessed the founda-

tion of the McLean Asylum at Somerville, Mass. . . . Later on, "The Retreat at Hartford, Conn., opened in 1824, and the asylum at Worcester, Mass., in 1930. It was on March 28, 1841, that Miss Dix was first brought face to face with the condition of things prevailing in the jails and almshouses of Massachusetts which launched her on her great career." From Lexington, Ky., we have an extract from one of her letters dated December 22, 1843, "I left Boston in September, as you know . . . and so on as far as Pittsburgh west." In 1847 we have the foundation of The Western Pennsylvania Hospital, incorporated in 1848. In another letter we find ". . . an entirely new asylum to be founded near Pittsburgh, an institution on the plan of the Rath House near Hamburg, Germany." So Dixmont came into being and November 11, 1862, 113 patients were transferred there from The Western Pennsylvania Hospital.

Dixmont today represents a modern hospital for the care and treatment of the mentally ill, having 1130 beds, six staff members and a consulting medical staff of recognized proficiency.

ST. FRANCIS HOSPITAL.

Of foremost importance in a historical review of the psychiatric activities of Pittsburgh stands St. Francis Hospital, covering six acres at 44th Street. It is the only privately owned general hospital in Pennsylvania that maintains a department for neuro-psychiatric patients.

From a modest beginning in a little frame house on 37th Street in 1865, with three Franciscan Sisters in charge, the institution has developed until today it represents a large modernly equipped psychiatric department with a capacity of 200 beds and a medical department with some 400 beds, having all the most approved facilities for dealing with medical and surgical problems. A commodious nurses' home recently added to this hospital is probably unexcelled in the state.

A few historical dates of interest in the hospital's evolution include that of 1868 when its first charter was taken out; 1866-1872, when heroic services were rendered during a small-pox epidemic; 1880, first admission of mental cases; 1884, state license procured for detaining "insane female patients."

While 125 mental cases were handled at the beginning of the century we now find a yearly turn over of from 1500 to 1800 patients in the psychiatric department, supplying a service to 12 visiting and two resident psychiatrists. Since 1920 the service has been in the main for acute cases and the department has acted as a clearing-house for transference of cases to the proper state or county institutions, and for most of the mental hospitals in the western part of the state, as well as for West Virginia and part of Ohio. This department has been of inestimable value to the city and Western Pennsylvania. Its resources have been available for the immediate handling of urgent police and accident cases, where provision has often been lacking through official city channels. The available psychiatric teaching has been taken advantage of by social workers, physicians and classes in psychology from institutions and agencies within a radius of 100 miles.

While this department has its own office, with independent record and bookkeeping systems, yet it is closely tied up with the other departments of the hospital, especially the laboratories. The internes rotate on this as well as all other services, and the attending psychiatrists are members of the general hospital staff. The nursing service consists of a director, a teaching supervisor, head nurses, assistant head nurses, graduate general duty staff nurses, and a large group of students. The St. Francis Hospital School of Nursing has always included this service in its nursing program and for the past year, the school has offered affiliations (three months) to students from other schools. At the present time this affiliation is in force with Mercy and St. John's Hospitals, Pittsburgh, Latrobe Hospital, and New Castle Hospital. A number of other schools are arranging for affiliation, and the better care of neuro-psychiatric patients will result.

The psychiatric department of St. Francis Hospital has also donated the use of its rich clinical material for psychiatric teaching in the department of medicine of the University of Pittsburgh since 1910.

PSYCHIATRY AT THE UNIVERSITY OF PITTSBURGH.

It was in this year (1910) that the department of psychiatry was established under the able leadership of Dr. W. K. Walker,

who was succeeded by the present incumbent, Dr. C. H. Henninger, in 1928. The psychiatric, clinical and didactic lectures are given weekly through the fourth year medical courses.

Plans for a state psychiatric hospital to be located in Pittsburgh on land donated by the university as part of the medical center were withheld from realization by the recent financial depression. This project will undoubtedly go forward in the near future, in keeping with the need and progress of the times.

PITTSBURGH CHILD GUIDANCE CENTER, INC.

Established October 1, 1931, under a grant from the Buhl Foundation. Accepted as a member agency of the Community Fund, January 1, 1935. Clinical services limited to children under 18 years of age who are residents of Allegheny County. Children may be referred for clinical study by their parents or by any interested person who has first obtained the parents' consent and their expression of willingness to cooperate in the study and treatment plans that may subsequently be made.

The primary functions of the Child Guidance Center are those of research and education in the field of child behavior and child guidance. It attempts to fulfill these functions through the following services:

1. *Clinical.*—This service is in the nature of a fourfold study and treatment of children by a staff team consisting of a psychiatrist, a psychologist, a psychiatric social worker and a physician. It is designed for that group of children who are in distress because of unsatisfied emotional needs or who are at odds with their environment—children whose personality development is thrown out of balance by difficulties which reveal themselves in unhealthy personality traits, problem behavior or an inability to cope with social and scholastic situations with which they are faced. The total number of such children that can be accepted for clinical services is necessarily limited because of the large amount of time that must be devoted to each one.

2. *Educational.*—By means of talks and lectures to lay and professional groups the staff of the center attempts to interpret the child, his psychology and behavior, to the adults who deal with children. It is hoped that through this service a large number of children will be indirectly benefited.

3. *Training.*—Clinical facilities are offered to students in psychiatry, psychology and social work for field work training.

About 700 children are given service annually. The staff consists of two psychiatrists, two psychologists, three psychiatric social workers and a part-time pediatrician. There are also a part-time workshop instructor and a part-time volunteer instructor in crafts. The workshop and crafts class are experimental group projects.

WESTERN STATE PENITENTIARY.

Constituting one of the psychiatric facilities of the University of Pittsburgh, we call attention to the important work which has been carried on at The Western State Penitentiary. This work has been invaluable as a contribution to the study and prevention of crime. Psychological and psychiatric studies have been routinely carried on at the penitentiary since its initiation by Dr. William T. Root, head of the department of psychology of the University of Pittsburgh, in January, 1924. Case histories and exhaustive mental ratings of the entire prison population have been continuously tabulated. The work is thoroughly organized and includes psychiatric examination of all psychopathic cases when first sentenced and as necessary thereafter for the purpose of parole, pardon, etc. Dr. C. C. Wholey is consulting psychiatrist. There is a full time psychological staff under the direction of Dr. Giardini, psychologist. Students from the psychology department of the University of Pittsburgh are credited with work done in this prison department.

CITY OF PITTSBURGH DEPARTMENT MENTAL HEALTH.

Among the psychiatric resources providing for the city's needs the Mental Health Clinic under the Department of Public Welfare performs an important function. The clinic was established in 1922. At first it attempted to do purely clinical work for the community at large. It still serves in this capacity, though at present it has been enlarged and now embraces three divisions: The Mental Health Clinic, the Police Court Division and the Parole Division.

The Mental Health Clinic functions every afternoon except Saturday. Appointments are made at the request of social workers, following upon the receipt of their case history. The Mental Health

Clinic has a psychiatrist and a social worker in attendance each morning at Moral Court to examine those who may be thought to need psychiatric care.

The Parole Division takes charge of patients who are paroled from the Pittsburgh City Hospital at Mayview, and holds a clinic for such patients three afternoons a week. The clinic finds, through this threefold function, that it fills the particular and peculiar needs in the city which cannot be served through the routine neurologic and psychiatric services of the various hospitals.

At No. 1 Police Station, 703 potential mental patients were examined during 1935. One hundred and ninety-eight of these were referred from Morals Court and the balance from the various police courts throughout the city. They were referred for mental examination at the request of other members of their families, the police, social workers, and many by the patients themselves. Of these 703, there were 428 who were sent to Mayview, the City Hospital, for observation as mental patients. The Parole Division of the Mental Health Clinic is held three times per week. There are approximately 125 visits by patients to this clinic each month. The active case load constantly numbers about 300 paroled patients. Paroled patients are expected to come to the clinic as often as the parole psychiatrist orders them to come. At present the active personnel of the Mental Health Clinic consists of Dr. Edward E. Mayer, psychiatrist-in-charge, assisted by Dr. J. C. McLean.

BEHAVIOR CLINIC.

An important psychiatric service on the threshold of realization is the formation of a behavior clinic. Its purpose to quote from the Pittsburgh Bulletin Index of December 31, 1936, will be to offer "an expert permanent board of doctors, psychologists and psychiatrists to look thoroughly into the cases of first offenders, mental defectives, sexual offenders, all alcoholic and narcotic cases. The behavior clinic will afford sentencing judges a scientific social laboratory for a complete determination of personality characteristics before imposing sentence. Combined with the present investigation of the probation office, it will mean a new era in the economical and humane handling of the social problems of crime." Working in close and essential relationship with the behavior clinic will be

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the already established County Probation and Parole Office presided over by experienced John Calvin Coulter. It is already rendering splendid service, has been freed of political control and manned with an expert personnel. It represents part of the modern mechanism of an enlightened penal system for most efficiently combating crime.

It is to Judge Ralph H. Smith of the Common Pleas Court that the community is indebted for the promotion of a behavior clinic. He voiced its need in the following words, "When a judge passes sentence upon a defendant without having as complete knowledge as possible regarding that offender's background, education, environment and motivations which prompted the act against the interest of society, that judge is merely guessing as to the proper disposition of the case."* In subscribing to the same course we quote from Judge Michael Angelo Musmanno as follows:

Under the present system the judge sentences the crime, not the person charged with the crime. . . . If a sentencing judge's duty and responsibility begins and ends with reading the portentous penal clause of a statute that opens and shuts prison doors, then an automaton could do his work. . . . *

THE JUVENILE COURT OF ALLEGHENY COUNTY.

The work of a well-ordered modern juvenile court carries with it such far-reaching psychiatric implications, particularly of a prophylactic nature, that we wish to quote in full the outline of this institution in Pittsburgh as furnished us by its able judge, the Honorable Gustav L. Schramm.

The Juvenile Court of Allegheny County is a court of record of the State of Pennsylvania, serving in the county the needs of dependent, neglected or delinquent children who are brought to its attention by the petition or information by individual citizens or agencies, before attaining the age of 16. The purpose of the court is to fulfill society's obligation and responsibility to children in need of care and guidance when their parents are unable or unwilling to do so. As the Supreme Court of Pennsylvania has well said, "It is the mere conferring upon them that protection to which, under the circumstances, they are entitled as a matter of right. It is for their welfare and that of the community at large. The design is not punishment, any more than is the wholesome restraint which a parent exercises over a child."

* Pittsburgh Bulletin Index, December 31, 1936.

In the operation of the court, every effort is made to know the child as an individual. He is given a physical and mental examination. An officer of the court is assigned to make a thorough study of his home life, of his school development, of his neighborhood contacts and those of his family and of his religious and social life. A complete report is furnished to the judge at least a day in advance of the hearing to enable him to read it unhurriedly and with an opportunity for reflection and consideration. At the hearing the procedure is kept in tune with the central purpose to help the child, rather than to treat him as a dependent, charged with a crime. In this way the best interests of society are conserved. Adults are usually invited, individually, into a small court room to tell what he knows and to secure his suggestions for the benefit of the child. The child is usually not brought into the court room in the presence of a group of people to be on exhibition, but is seen by the judge privately, more in the manner of a patient consulting with his physician. Any plan to help the child is likely to be more successful with his cooperation and desire to see the plan succeed.

To carry out such a program on an individual basis for the more than 7000 children who come to the attention of the court during a year requires proper physical equipment and an adequate staff. The new Juvenile Court Building will be ready for occupancy during the spring of this year. As a P.W.A. project, it was estimated to cost \$350,000. The estimate has not been exceeded but, instead, there will be sufficient balance to finance the purchase of all needed equipment and furniture as well. Visitors are welcome to what is believed to be a physically adequate and well-adapted building. There is a staff of 50 probation officers as well as supervisory and clerical members. Twelve trained nurses, on eight-hour duty, supervise children while under temporary care in the building, further assisting the medical department in its clinical appraisals of the needs of the children.

WOODVILLE AND MAYVIEW HOSPITALS.

Among the psychiatric facilities of Pittsburgh and environs we include two other large institutions, namely: The City Hospital, Mayview, and the County Hospital, Woodville. These are conducted along lines similar to those in the most progressive states.

Each institution provides some 4000 beds, divided about equally between the indigent and the insane. Dr. Gomer S. Llewelyn is medical superintendent at Mayview and Dr. Bingham Boyce at Woodville. We associate these two hospitals, although Mayview provides for the city and Woodville for the county, because of Woodville's proximity to Pittsburgh and its caring for the inhabitants in the thickly populated proximal cities, towns and boroughs.

The establishment of the Woodville County Home and Hospital was in 1853 and that of Mayview in 1893. Although it

was not, according to Dr. Bingham Boyce, Woodville's present superintendent,

until in 1900, following an Enabling Act of the Assembly in 1895, which provided that institutions financially able and desiring to build and operate their own mental hospital could do so and inasmuch as the majority of the county insane were cared for at Dixmont, the Board at that time felt that they should build such a hospital.

The hospital was completed and 103 patients were transferred from Dixmont to Woodville on October 2, 1900. The population of the mental department has increased rather rapidly and fairly consistently since that time until there are at the present time 2163 patients.

The present bed capacity for that department is rated at 2220 since the erection of the new buildings in 1935-1936. The average increase in population over and above deaths, discharges and paroles approximates 100 each year as far back as 1925 and longer. The admissions average a little better than one a day.

We have already referred to the interlocking relationship between Mayview and the city's No. 1 Police Court, Department of Public Welfare and Morals Court.

MERCER SANITARIUM.

There is a notable dearth of private sanitarium facilities in and about Pittsburgh, and indeed, in the western end of the state. The large need for such service is partially supplied to Pittsburgh by the Mercer Sanitarium, some 60 miles distant. There Dr. W. W. Richardson has developed a modernly equipped cottage system in a beautiful country environment, caring for approximately 45 patients.

I wish to express appreciation to those who so kindly supplied much valuable information. They include: Dr. W. A. Hutchinson (Dixmont Hospital); Sister M. Laurentine (St. Francis Hospital); Dr. Harry M. Little (Child Guidance Center); Dr. Edward E. Mayer (Mental Health Clinic); The Honorable Gustav L. Schramm (Juvenile Court); Dr. W. W. Richardson (Mercer Sanitarium); and Dr. Bingham Boyce (Woodville).

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PSYCHIATRIC STUDIES IN MEDICAL EDUCATION.*

II. NEUROTIC TRENDS IN SENIOR MEDICAL STUDENTS.

By EDWARD A. STRECKER, M. D., KENNETH E. APPEL, M. D.,
HAROLD D. PALMER, M. D., AND FRANCIS J.
BRACELAND, M. D.†

The preceding paper of this series * presented the method of study of the problem, examples of the replies of the students and certain implications as to the gravity of some of the neurotic reactions brought to light by means of the questionnaire. In the present paper we shall present the substance of the questionnaire together with the statistical results from the answers of the senior class.

The responses of the senior class of the Medical School of the University of Pennsylvania were studied first because it was felt that the personal evaluations of these students would be tempered by four years of medical experience, by their more mature years, and because they had the advantage of lectures and clinics in psychiatry in the third and fourth years. Their perspective would tend to lend weight and validity to certain conclusions which the study of the replies to the questionnaire would lead us to draw. It is a remarkable fact that out of 117 papers received from the seniors, only three were not sufficiently accurate and detailed to give us a clear-cut picture of the personality or the problems of the student. The 114, which we consider as fulfilling the criteria of frankness, completeness and accuracy, were analyzed in detail as indicated in the previous paper.

The present contribution presents the actual questionnaire, a statistical evaluation of answers to each question and a discussion of the results.

1. *Have you ever had neurotic or nervous symptoms? If, so, describe them in detail. (Neurotic symptoms are reactions disproportionate to any discoverable physical or emotional cause. They*

* Am. J. Psychiat., 92: 937-958, 1936.

† Medical School of the University of Pennsylvania and the Pennsylvania Hospital, Philadelphia.

may take the form of a persistent and disturbing bodily sensation, emotion, impulse or thought. Examples: sensitiveness, self-consciousness, worry, sleeplessness, fears, loss of initiative, discouragement, unexplained fatigue, headache, palpitation, indigestion—if they handicap.)

88 students, or 77 per cent, were sufficiently convinced of the experience of neurotic symptoms to answer this question in the affirmative. All of these elaborated their replies in a satisfactory manner. It is interesting to note that of the 88 seniors who felt that they had had neurotic symptoms we ruled out 27 as not genuinely neurotic in character. This shows that we eliminated a fair number of symptoms thought by the student to be neurotic, but so mild and so common that we regarded them as within normal limits. Only 26 students denied the presence of neurotic symptoms. Of this number only three were thought by us to belong to the neurotic groups. This, again, is an evidence of the surprisingly clear, accurate and frank replies consistently present throughout the questionnaire.

Some students were detailed in elaborating their neurotic reactions, as in paper 101. "Abnormally cold, numb, and tingling fingers. Constipation and diarrhea alternately. Over-sensitiveness—a feeling of being shunned. Self-consciousness when asked a question, get flushed whether I know the answer or not, become conscious of blushing and give any answer without thinking. Discouragement; every attempt to become accepted as a student or good fellow disrupted as soon as begun. A feeling of necessity of keeping on the move, whether it be just a finger or foot or jaw, etc." Several students expressed neurotic symptoms in relation to their social contacts, as in paper 67. "I have had indigestion and vomiting attacks especially while anticipating a social affair or getting ready to go to a dance or party. I am apprehensive about meeting new people and often at parties when refreshments are served I become nauseated and I am unable to eat. I am very self-conscious and worry a great deal."

2. Did they occur before or after you began to study medicine?

35 students (40 per cent) felt that their symptoms made their appearance before the study of medicine and 53 students (60 per cent) after the study of medicine. This response cannot, of course, be taken as absolute but is indicative of what the student thinks as

to the period in which his nervous symptoms appeared. The influence of medical education in the precipitation of neurotic symptoms or in the aggravation of existing neuroses was an object of close observation.

It was felt significant to make this evaluation in relation to the degree of neuroticism. The following table illustrates this relationship.

Group (or degree of instability).	Developed before.	Developed after.
I. Normal	8	9
II. Mild	8	12
III. Definite	7	13
IV. Marked	10	18
V. Serious	2	1
Total	35	53

It seems quite clear that the majority of neurotic symptoms made their appearance *after* study in medicine. 73 per cent of the 51 students whom we placed in groups III, IV and V, and classified as unstable, developed their neurotic instability *after* undertaking the study of medicine. (Two students did not make clear in their replies whether symptoms appeared before or after.) In paper 76, however, the student states, "Before the study of medicine I remember having some neurotic symptoms but these have certainly become exaggerated in my medical course."

In later discussions we shall call attention to the large percentage of students who felt that certain neurotic trends had been uncovered during medical school but who also believed that medical education had been a stabilizing influence.

3. With what medical experience were they most intimately related?

It is difficult to put the data obtained from this question into statistical form, but there was a significant recurrence of such items as "anxiety before examinations," "worry about physical health during classes in pathology and physical diagnoses, lectures on heart disease, lues, etc." For example, a student stated, "I suffered insomnia, extrasystoles and a nervous itching of the skin most pronounced at times before examinations and when my appointment to interne-ship was still unsettled."

4. How is your physical health? How is your physical condition?

Here we attempted to differentiate between the somatic state or the physical health (meaning lack of handicapping illness) and physical condition (meaning the degree of physical efficiency or "condition" in the sense that the word is used in athletics).

58 per cent of students reported physical health as good and 12 per cent reported it as excellent. This is striking in view of the fact that 14 of the students were known to possess organic physical disease. 70 per cent then, were actually in satisfactory physical condition while 77 per cent had reported themselves in the first question as having had neurotic symptoms. This is an interesting distinction made by the students between the possession of good *physical condition* and the presence of *neurotic symptoms*.

5. During your period of medical study has it remained the same, has it been better or has it been worse?

63 per cent of students felt that they had remained unchanged with regard to their physical states while 22 per cent felt that they had definitely declined. Student 65 gives a fairly typical response, "A gradual decline of physical vigor. I am certainly not the man I was."

6. Has your sleep been affected? How many hours do you sleep?

Sleep was affected in an unfavorable manner, that is, sleep was felt to be insufficient, in 43 per cent. Generally, students got less sleep than they formerly had. One student expresses himself in the following way, "I average about eight hours sleep during good times but have occasional insomnia of a week's duration."

7. Have the requirements of the study of medicine interfered with your normal exercise?

86 per cent felt that the requirements in medical education had interfered with the normal amount of exercise. It is impossible, of course, for students who were formerly on varsity teams or active in athletics to continue to participate in athletics in the same degree as they had before the study of medicine. In this group are, naturally, a number of students who played on varsity teams. This restriction is not, of course, due solely to the interference of medical studies. The majority of students active in athletics give up a certain amount of physical activity after leaving college. It does, nevertheless, mean that the pressure of medical study interferes definitely with out-of-door exercise and recreation. For ex-

ample one reply stated, "My sole exercise now is standing and walking around in the daily routine required at school and in commuting."

8. Have your medical studies produced a bothersome amount of fatigue?

Fatigue is a factor which might be expected to be prominent. In our experience, it is a symptom common to college students in every school. In reviewing student health questionnaires of all entering freshmen at the University of Pennsylvania, the majority suffer from fatigue and a sense of exhaustion. We wondered whether the medical course and the attendant pressure of work would be abnormally fatiguing. 33 per cent felt that their medical studies had produced a bothersome amount of fatigue. When viewed in relation to the decreased amount of sleep and the reduced opportunity for physical exercise, we can conclude that there is a general lowering of physical efficiency. Student 41 answers the question in this interesting way, "Yes. Occasionally I get exhausted but when I get in that state I go to bed for the night and sleep about 20 hours. Then I can hold out for another two weeks."

9. Since studying medicine have you developed any persistent physical symptoms, e.g., pain, palpitation, indigestion, etc.?

This question furnished leads as to the frequency of neurasthenic or conversion symptoms, as well as certain physical ailments which occurred during the study of medicine.

37 per cent felt that they had developed *persistent* physical symptoms during the study of medicine, while 63 per cent had been free from such disturbances. This is, of course, in addition to that number who had psychasthenic symptoms or merely episodic neurotic reactions. Student 48 developed persistent symptoms which he describes as follows: "I am conscious of palpitation in peripheral vessels and a marked pulsation of my heart and over my arteries."

10. Has any physical restlessness or irritability increased during your study of medicine?

47 per cent of seniors felt that physical restlessness and irritability had increased during the study of medicine. It is quite common during the latter part of the medical school year to encounter such feelings among students as is expressed by student 80 as

follows: "I have been more irritable especially toward the end of each year. Nervous symptoms of clicking my fingers, increasing the use of cigarettes, etc."

11. Have your habits of eating, drinking or smoking changed significantly? If so, in what direction?

61 per cent felt that they smoked more and 35 per cent less, while the remainder felt that in these instances they had remained unchanged. A small number of students stated that dietary habits had become irregular and faulty. Student 62 states, "I eat less, less regularly and smoke more," while another student makes the following frank statement, "My dietary habits are terrible. I smoke more and drink more frequently but less at a time."

12. Is the work required of you easy, difficult, or do you think too much is asked of you?

It is a very interesting fact that 50 per cent felt that the work required of them was easy while only 13 per cent felt that it was difficult or that too much was asked. The remainder felt that it was moderately difficult but not excessive. On one paper we found the following remarks, "The work is neither easy nor difficult. I believe any person in medical school can get through with a good memory. Too much is asked for the time allotted and this creates a pressure of work. One could not be fitted for the practice of medicine by just keeping his nose in books all of the time although he could in that way probably get through school."

13. Has your previous work prepared you well for the subjects you are now studying?

77 per cent of seniors felt that their previous college work and their previous years in medicine had prepared them well for the senior subjects. 22 per cent felt that their previous work had prepared them poorly. For instance one student answered this question as follows: "No. My previous work was analytic and pretty strictly scientific which did not develop my powers of memory and, since memory is so much depended on in medical school, I believe I was somewhat handicapped."

14. Is your standing in class the same, higher, or is it lower than last year? (If you are a freshman how does it compare with your pre-medical or college work?)

53 per cent of seniors felt that their standing in the class was higher than it had been in the previous year while 6.5 per cent felt that their academic standing had been lowered in the senior year.

15. Are you enthusiastic? Does your work stimulate your interest?

92 per cent were enthusiastic and 94 per cent felt that the work was stimulating to their interest. It was quite common to find that as the student entered clinical years, particularly the senior year, enthusiasm and interest became definitely stimulated. Student 100 expresses himself as follows: "My enthusiasm is short lived. An interesting lecturer stimulates me but in my studies the voluminousness overwhelms me. I have been more enthusiastic in my senior year than in my years before."

16. Is it hard for you to concentrate? Are you absent minded?

A surprising number of students (45 per cent) stated that it was difficult for them to concentrate. This question is undoubtedly related to those on fatigue and physical efficiency (8 and 10). The replies were not interpreted as indicating neuroticism unless there were abnormal preoccupations, excessive day dreaming, or marked instability.

46 per cent were absent minded but we attached no great significance to an affirmative reply unless it was related definitely to other positive evidences of neuroticism. Student 91 had the following difficulty, "I can no longer study for hours at a time. My limit has been about two hours the last year or two and then I begin to fatigue rapidly."

17. Do you have difficulty in making decisions?

42 per cent experienced difficulty in making decisions. For example, student 17 says, "Sometimes, very much so. At other times I feel sure of my decision as soon as any question for decision is put to me." Student 7 says, "I have no persistent difficulty. The importance of the decision and the related consequences, however, do govern the ease with which I make decisions."

18. Has the study of medicine influenced you to think certain thoughts that constantly distract you? If so, what are these thoughts?

20 per cent answered this question in a way which would indicate that obsessive thoughts or neurotic preoccupations were distracting influences. It will be noted in our conclusions that 24.6 per cent of students suffered from emotional maladjustments and, in our estimation, would continue to suffer some emotional instability

which would in all probability impair their professional and social efficiency. Indicative of a fairly deep personality difficulty which has shown itself in replies to most of the other significant questions, student 60 states as follows: "Medicine has made me think that marriage means an unknown and unpredictable future, that is at cross purposes with the well-defined goal of medicine. Life lacks emotional unity."

19. Have you made any experiments on yourself, or self examinations or have you had examinations made, physically or psychologically not required by the curriculum that have been stimulated by the study of medicine?

41.4 per cent of seniors had made examinations on themselves other than those required by the routine entrance examinations. It is interesting to note the frequency with which students made examinations of seminal fluid to determine their own fertility. Only 14 students (11 per cent) in the senior class suffered from known organic disease and eight of these had no neurotic reactions to their physical illnesses. There were 5 cases of heart disease, two diabetics, two with pulmonary tuberculosis and one each of arthritis of the spine, severe sinusitis, nasal allergy, non specific urethritis and varicocele. *It is evident that less than half of the students suffering from organic pathology reacted in a neurotic way to the presence of the disease.* This is in sharp contrast to 30 students who possessed no organic disease but who had numerous somatic complaints.

20. Do you day dream? Much? Does it interfere with getting things done? If you do day dream, describe your most common day dream.

Quite in accordance with the customary idea of the frequency and normality of day dreaming it was found that 81 per cent of seniors spent some time in day dreaming. Only 8.5 per cent, however, indulged "much" in day dreaming. 4.3 per cent felt that it interfered with getting things done. It is impossible, of course, to summarize statistically the description of the most common day dreams but the most common answers seemed to be about "future successes" or "women."

21. Have you become more conscious of either physical or mental defects since your study of medicine? If so, explain their nature and tell how you became conscious of them.

This question also related to question number 19 and much of the discussion under that question applies also to this. 43 per cent of the seniors became more conscious of physical and mental defects. However, again, we want to point out the sharp contrast, as noted before, between the physical morbidity (11 per cent) and the emotional instability, (77 per cent). 8 of the 14 seniors having organic physical disease showed no untoward emotional reactions to their physical illness. This is in contrast to the 49 per cent (see question 47) who had anxieties and fears about their health but who had no somatic disease. One senior frankly says that he has come to recognize that his limitations lie chiefly in the field of life adjustment. This quotation represents a rather deep-seated introspective tendency, "Yes. I have been more conscious of mental defects. I was tactfully informed that I antagonized people by an attitude of superiority and I am conscious of a tendency to be critical of people."

22. *Have your experiences in the study of medicine, in your opinion, produced defects in your personality, or have personality defects been corrected or relieved by your medical studies? Explain briefly.*

It is an encouraging finding that although 60 per cent (see question 2) felt that their neurotic symptoms had appeared after the study of medicine, 74 per cent believed that personality defects had been corrected or relieved. Notwithstanding the relative frequency of neurotic episodes, the great majority underwent personality growth and reorganization. Student 69 expresses himself as follows: "My personality is unchanged but I am more irritable than I was prior to my advent into medicine." Another said, "I believe that I have become a better fellow. I am more interested in being accepted by the world than I am by acquiring some self-glory."

23. *Have your experiences in the study of medicine made you feel more self-confident or have they made you feel more timid, inadequate or inferior? In either case explain briefly.*

90 per cent of students felt that they had become more self-confident during their medical careers. Only 9 per cent felt that they had become more timid, inadequate or inferior. This is an interesting statistical finding in relation to our impression that 46.5 per cent presented unstable emotional reactions. The acquisition of self-confidence is, of course, not incompatible with the de-

velopment of neurotic symptoms. We all see neurotic individuals who can carry on in life quite competently, and many neurotic students can gain considerably in self-confidence and feel definitely helped and stabilized without completely overcoming a fundamental instability. We interpret the 90 per cent as indicative of some stabilization brought about through the acquisition of vocational knowledge and professional technique. It seems to us that there can be no doubt of an increase in emotional and social security brought about by the acquisition of a medical education and professional capacity.

One of the seniors shows a rather marked exaggeration of his feelings of personal inadequacy and inferiority in his answer to this question, "I have become more timid, inadequate and inferior. I can no longer give a definite answer to a question. I never volunteer an answer now even if I know it since I dread the chance that it might possibly be wrong or I might seem silly in the eyes of my classmates."

24. What type of personality do you feel that you possessed before your medical course? i. e. (Unstable, wide changes in mood, worrisome.) (Extravert—outgoing type, social, hail fellow, etc.) (Introvert—shy, asocial, withdrawing type.) Underline the type to which you think you belong. Do you feel that it has been modified by the study of medicine? How has it?

An effort was made to determine the incidence of the various personality types, *i. e.*, those predominantly introvert, extravert and mixed, and to evaluate, if possible, the significance of introvert or extravert traits as assets or handicaps in meeting the stresses of medical education. (In a few instances, in which *our* evaluation of the student's personality differed from *his* stated opinions as to introversion or extraversion, we made a change to the correct classification.) 66 (58 per cent) were introverts while only 41 (36 per cent) were extraverts and 7 (6 per cent) mixed. 48 per cent of introverts can be classed as definitely unstable, and 44 per cent of extraverts. The high percentage of introverts among medical students is probably contrary to what one might have expected. It was of interest that the great majority of introverts (41 per cent), whether normal or neurotic, felt that they had become definitely more extraverted in their interests and activities since medical school. 24 remained the same. Only one introvert felt that he

had become more self-centered and introverted. The great majority (73 per cent) of extraverts, on the other hand, remained the same while only 7 became more introverted and 4 felt that their extraversion had become more pronounced.

There was a question in our minds in formulating this inquiry regarding personality, as to whether or not introverts would tend to become more introverted due to the confining nature of medical studies. This does not seem to have been the case. We attempted, also, to establish some relationship between the frequency of neurotic symptoms among introverts and extraverts. The correlation with the groups I, II, III, IV and V is expressed in the following chart:

Introverts.				Extraverts.			
Group or degree of neuroticism.	No. of seniors.	Percentage of introverts in the class.	Percentage of group.	Group or degree of neuroticism.	No. of seniors.	Percentage of extraverts in class.	Percentage of group.
I. Normal	17	26	47	I. Normal	15	36	41.5
II. Slight	17	26	68	II. Slight	8	20	32
III. Definite	12	18	55	III. Definite	9	22	41
IV. Marked	18	27	65	IV. Marked	8	20	28.5
V. Serious	2	3	67	V. Serious	1	2	33½

It will be seen that 48 per cent of introverts fall into groups III, IV and V, while 44 per cent of the extraverts fall into these neurotic groups. The results of such a classification indicate broadly that introverts are not necessarily more highly neurotic in medical school or more susceptible to the development of neuroses than the extraverts. We can see that 52 per cent of introverts possessed good personality adjustments against 56 per cent of extraverts. In summary, then, the personality type is apparently of little significance as regards the development of instability in the medical school career.

One student with good insight expressed himself as follows: "I am a sensitive extravert and my interests are largely in others, but in the subtler aspects of the personality. I do not like to be alone but I can stand it. I have become more extraverted in that I have obtained confidence in my ability to be liked by others and I have improved my ability not to care if others do not like me."

25. Since studying medicine do you feel differently about your own childhood, your childhood training or your parents? If so, explain.

55 per cent felt differently about their own childhood or parents. Most of these felt a greater understanding of the responsibilities of parenthood and a greater appreciation of the sacrifices which the family had made to make medical education available for them. Student 45 made the following comment: "I have felt differently about my childhood. I am an only child but do not think I was unduly spoiled. I have, however, come to resent highly the refusal of my family to think of me as independent. I was forbidden to smoke at home until six months ago and I resented it bitterly." Student 48 said, "I feel differently about my childhood and parents; when I look back on the things which I was taught to think of as crimes, masturbation, etc., I can laugh but I also criticize my parents for poor handling of my childhood problems."

26. Have family stresses, economic or other (jealousies, etc.) interfered with your medical studies or altered your feelings toward your family? If so, explain.

28 per cent felt that family stresses interfered with their medical studies or altered their feelings toward their families. In the majority of instances, the stresses were economic. For example, in paper 62 the following interesting statement appears, "Economic stresses have interfered the last few years and have caused the future to seem very uncertain. My father is very jealous of the respect his children have for their mother, feeling that they do not respect him sufficiently. He is bitter toward many people because of financial losses." Student 45 says, "Yes. My conflicts with my family have been difficult. My desire to be away from home has interfered very much with my studies. If I did not have an I. Q. of 130 I should most certainly have flunked out."

27. Have your medical studies and experiences influenced your relationship to men and women and to society in general? Have they made your life mean more or less?

86 per cent felt that their medical experience had influenced in a constructive way their relation to men and women and society in general, and had made life mean distinctly more. One senior who felt that he had benefitted says, "Yes. Life means much more. My primary interest now is in people as human and emotional indi-

viduals. My medical studies have increased my insight and understanding of people." Student 28 answers this question in the following manner, "My life means more. I am more kindly and tolerant toward the individual but perhaps I have become more resentful of social meddling in many things which I think are purely individual problems." Student 46, who is obviously suffering from an emotional problem, replies, "I think less of women as such and more of them as an organism. My life seems to be of less value to me but, however, I am less worried about dying." A constructive attitude is seen in paper 19, "My medical studies and experiences have added a fullness to my life and have given it a real sense of direction which I felt was lacking heretofore."

28. *Are you quite happy and content with your medical training? If not, why not?*

81 per cent answered this question in the affirmative and 18 per cent, a rather surprisingly high number, felt dissatisfied with medical training. These senior students looking back at the close of their four years felt that their academic preparation for practice had not been adequate and that the approach was in many ways too academic. It must be borne in mind that these opinions were expressed before internship and it is doubtful if the same number of students would have the same opinions after their year or two of practical application of the knowledge gained in medical school. Student 48 makes this comment: "I blame myself for what has not been learned in medical school but I believe the old time questioning would be advantageous especially in X and X courses. I believe that we should have specific case assignments more often." Student 64 adds a critical note, "I feel that my medical training is quite adequate in many respects. In some points I am at fault; in others the curriculum is definitely too difficult and the time has been too short."

29. *Have you resorted to alcohol as a social prop? How consistently have you used it to make your social adjustments easier?*

51 per cent felt that they had used alcohol as a social prop. One student stated that he drank less since entering medical school. 30 per cent stated that they drank occasionally in medical school but did not use alcohol as a social prop.

It is of interest to note the relationship between the use of alcohol for the purpose of easing social relations and the occurrence

and degree of neurotic reactions. The following table summarizes these data:

Group.	Percentage of seniors who used alcohol or relied on it as a social prop.	Percentage of seniors who did not use alcohol.
I. Normal	55	45
II. Mild neuroticism	34	65
III. Definite neuroticism	45	54
IV. Marked neuroticism	63	37
V. Serious neuroticism	67	33

It is significant that of those who we feel can carry the load of life or those to whom neurotic reactions do not represent a significant hazard only 45 per cent have used alcohol, while 65 per cent of those belonging to the more severe neurotic groups, or the students about whose futures we feel uncertain use alcohol as a social prop. Student 45 expresses himself quite frankly as follows: "Yes. I resort to alcohol as a social prop. I drink largely because most people are damned boring and I thus can enjoy their company more. It also oils up the conversation. I do not believe I need it personally as a subjective prop."

30. Have you consulted professors about personal or family problems? Have you felt the desire to consult them?

22 per cent of seniors had consulted their professors about personal or family problems. No attempt was made to determine whether the questions were personal or related to family situations but in a few instances the students stated that they were personal. 30 per cent stated that they had a desire to consult their teachers but had not done so. 52 per cent of the class felt the desire to discuss personal or family problems with professors. Would it have been thought that such an extensive need existed among our medical students? Should opportunity not be furnished for such consultation? A student who obviously has need for psychiatric guidance answered the question in the following manner, "Yes. I consulted a professor about a problem and he sent me to a psychiatrist. I was distressed. I did not go because I was afraid that he would see my lack of understanding and knowledge and keep me from the profession which I longed for. I gave up a very exact science in which I was very good in order to study medicine."

31. Why did you decide to study medicine? Who or what influenced you? How?

56 per cent felt that relatives, who were in the practice of medicine, or who had families who were eager to have the student enter medical school, were responsible for their study of medicine. 28 said they had undertaken the study because of scientific interests. 4 were stimulated by the family physician. 3 studied medicine because of a prolonged physical illness which had afflicted them in early life and had imbued them with a desire to know more of the workings of the human body and the treatment of illness. Student 65 makes this interesting statement: "Two factors: (1) desire to enter a calling which would give the least play to my tendency toward introspective, useless, abstract thinking. (2) The inspiration of a doctor friend and an advisor whom I greatly admired."

32. *What are your hobbies?*

We have not made a statistical calculation of these answers because they were too varied. The majority had hobbies involving some physical recreation.

33. *Are you scrupulous, neat, meticulous, punctual, reserved, spontaneous, dominating, submissive, indifferent, careless, inaccurate, impulsive, lazy? Underline the traits which characterize you.*

This question has not been treated statistically in the present paper because, although it is one of the most specific, and required only a dash to indicate a characteristic which applied to the student, it, nevertheless, was the most consistently unsatisfactory question. It was invariably answered but it helped least of all in obtaining a picture of a given personality. This study is different from many questionnaires where underlining or checking is the chief form of response. In this questionnaire, in the great majority of questions, definite written replies were necessary—and they were obtained.

34. *Do you make friends easily?*

74 per cent felt that they made friends easily. 25 per cent felt that they did not. Student 66, who gave many other evidences of a serious problem, stated as follows: "Yes. I make friends easily with the masculine type, tall and erect. The small male with the soprano voice is to be pitied rather than befriended."

35. *Do you prefer the company of men or women?*

47 per cent preferred the company of men, 25 per cent the company of women, the remainder answered "both."

36. *Has your sex desire been stimulated or decreased by the study of medicine? Why? If either of the above are true, how have you dealt with the problem produced?*

33.3 per cent felt that sex desire had been stimulated, 58.7 per cent that it had remained the same, while the remainder felt that their interest in such matters had decreased. There was a surprising frankness in the answers to this question as illustrated by quotations found in the introductory paper. The reply of student 71 is an example of this frankness, "My sex interest has been increased somewhat. I do not know why. I have enlarged my sex life and have taken advantage of sex opportunities wherever they presented themselves." Some students felt that their sexual interest had increased due to their studies in medicine and attempted to sublimate their impulses as, for example, in one paper, "Sexual desire increased due to maturing, lack of other emotional outlets. I have attempted sublimation by out-of-door activities rather than parlor dates, social contacts, learning new sports and studying music."

37. *Has fear of venereal infection changed your sex life? If so, how?*

22.2 per cent felt that fear of venereal infections had altered their sex life.

38. *Have your ideals of womanhood or parenthood been in any way changed by your experiences in medicine? If so, explain.*

54 showed no change. In 46 there had been constructive change. 21 of the 46 seniors felt that they had been helped to greater understanding and were broader in their points of view regarding women. 25 felt less sentimental but saner and more practical in their idealism of women. For example, student 38 states, "Women and parents on a much higher plane than before. Parenthood a real responsibility. Saner ideas. Desire for happy marriage and for parenthood increased since study of medicine." Only 13 seemed to feel that medicine had not influenced their regard for women in a constructive way. The reactions of 9 of these were definitely unhealthy while in only 4 was there a general loss of respect for womanhood. As an example of this attitude, student 76 says, "Believe women not deserving of much chivalry. Parenthood is an accident and not deserving of much credit." Another expresses himself in the following manner, "The difficulties of delivery and pain of child-

birth and the gamble with life which women take brings forth my sincerest admiration for any woman who was or is a mother."

39. Since beginning the study of medicine have you had any doubts concerning your normal masculine or feminine sex make up? If so, why? What is your present attitude concerning it?

This raised the question of sex adequacy and afforded opportunity for the discussion of sex conflicts and lead to discovery of possible homosexual trends. 17 students had some doubt about the normality of their sexual make-up, 98 had no feeling of concern, and a few had definite homosexual trends. One student makes the following cryptic statement, "Let sleeping doges lie." Student 71 says, "I feel that I am a normal male with much better control of my sexual feelings than the average male." Student 101 states, "Yes. I have worried about sexual underdevelopment. Why worry? Nothing can be done about it and there are probably enough sperm to get progeny if you ever want them." Student 45 makes an interesting statement, "Yes. I was disturbed to find my interest in cold, wet things was a symbol of Freudian homosexuality but I concluded that it is more Narcissism with me so I have dismissed the subject. I believe I am essentially normal, whatever that is."

40. Are you married? Engaged? In love? Has your medical experience altered your attitude or relationships in these situations? If so, explain?

In reviewing the papers we felt that the replies to this question furnished leads as to the psychological significance of marriage before or during the medical school career. It seemed to us that a rather high percentage of neurotic students were married. It is possible to explain this on the basis of an unstable personality seeking security through marriage. The impression was not gained that married students were neurotic because of marital maladjustments. 14 students (12 per cent) in the senior class were married, 26 (24 per cent) were engaged and 20 (17 per cent) admitted that they were in love. The detailed figures in relation to neurotic groups are as follows:

Group.	Married.	Engaged.	In love.
I	2 (14.3%)	7 (27%)	5 (25%)
II	2 (14.3%)	10 (38.5%)	3 (15%)
III	4 (28.6%)	5 (19.2%)	5 (25%)
IV	5 (35.7%)	4 (15.3%)	6 (30%)
V	1 (7.1%)	0	1 (5%)

71.4 per cent of married seniors, 34.5 per cent of the seniors who are engaged and 60 per cent of those in love fall into groups III, IV and V which we have regarded as unstable.

Notwithstanding the apparently increased degree of neuroticism among married students, it did not seem to interfere with their scholastic accomplishments for as a group they did slightly better work than the average.

In some instances there were evidences of a relaxation of moral rigidity as in paper 65. "I am in love and I have a sexual companionship with a young widow. This would have been impossible for me to experience four years ago because of the ideals and conventions which I then held. Also, three years ago entering the study of medicine caused me to break off my engagement." A senior, whose emotional problem has been previously mentioned, says, "Medical experience has altered my attitude in these situations. I would like to find a mate and have children, three or four at most, before I am too old to enjoy them and educate at least two sons and one daughter in medicine whether or not they ever practice it."

41. As a student of medicine what is your attitude toward organized religion? Have you retained your previous religious affiliations? How have you adjusted your beliefs to scientific knowledge?

Because of the magnitude of this question and its significance, it will be discussed in a separate contribution. We have some very interesting and important data from the students concerning the significance of life, or professional ideals and religious beliefs. Student 46 makes the following remarks: "I have changed to a less dogmatic, more tolerant and far more earnest organized group. My spiritual concepts are entirely in harmony with my scientific knowledge. Death seems less cold, more mysterious, generally more attractive and less important." Another one writes, "I am an agnostic but I render lip service to organized religion because it is a good thing for the mass of humanity and therefore it merits my support."

42. Have your thoughts concerning death been modified by your study of medicine and if so, in what way?

50 per cent of the seniors answered this in the affirmative. The following are interesting quotations: Student 18 says, "Death and the dead have lost much of their mystery." Student 26 says, "It does not worry me much and does not interest me." Student 28 states, "I am less afraid of death and I really do not bother much

about the subject." Student 53 makes this brief statement, "I have been hardened to death."

43. *Since beginning the study of medicine have you become an agnostic, an atheist or an ardent believer?*

This question will be treated separately but in conjunction with a separate paper based on the replies to questions 41 and 42.

44. *Do you intend to engage in the general practice of medicine, or in the practice of any of its specialities? If so, which one and what has determined your inclination?*

63 per cent planned to enter the general practice of medicine.

11 per cent planned to enter obstetrics and gynecology.

11 per cent planned to enter surgery.

5 per cent planned to enter pediatrics.

3 per cent planned to enter psychiatry.

3 per cent planned to enter urology.

2 per cent planned to enter research work.

1 per cent planned to enter orthopedics.

1 per cent planned to enter nose and throat.

It is interesting to note the high percentage of students planning to go into general medical practice. Comparison of these figures with those from the three other classes will furnish data as to changing preferences in the field of medicine. Data from other medical schools on this point would be worthwhile. It is conceivable, of course, that some medical schools are attracting students especially because of opportunities for research and specialization.

45. *In case of failure in medical school what would you do?*

Among the more neurotic students, the statement that suicide would follow failure in medical school occurred occasionally. The majority would enter some branch of teaching. A number stated that they would try again in other medical schools until they succeeded. The seriousness of the problem of scholastic failure in medical schools as they are at present organized, represents an unwholesome strain on the integrity of the student's personality. The pressure of work and the dangers of failure even in one branch of study, the threat to the entire vocational future, represent stresses that are met in scarcely any other branch of professional training.

46. *Have you any interest or desire to discuss any personal problem with a psychiatrist?*

21 per cent wished to consult a psychiatrist regarding a personal problem. This number is interesting in relation to our finding that 24 per cent of seniors were markedly unstable. Some of the students wrote on the questionnaire a request for a consultation with a member of the psychiatric teaching staff. In addition to this, three of us had been seeing some members of the senior class during the school year regarding severe personality problems.

47. Has anxiety about your own health been aroused by your study of disease? Has fear of infection or contagion worried you, in dissection, pathology laboratory or clinics?

48.6 per cent of seniors suffered from anxiety about physical health aroused by the study of physical disease. It is, of course, quite usual during the study of disease processes in pathology, physical diagnosis and medicine to experience fear and anxiety regarding the presence of organic disease. It will be interesting to see if a higher percentage of students in the sophomore and junior classes have answered this question positively. The seniors wrote their replies to this questionnaire in the last few weeks of their medical school careers and after considerable experience in clinics had tempered their phobias and anxieties regarding physical health. Likewise, the seniors had completed their courses in psychiatry and had perhaps learned how to deal more efficiently with such experiences. In a review of the students coming to the Health Service of the University of Pennsylvania, we find that it is very much more common to have requests for electrocardiograms, repeated chest X-rays, and orthodiagrams from members of the sophomore and junior medical classes than from the seniors. It is of great significance that fear of infection and contagion in dissecting room, laboratories and clinics affected about half of the class. It appears that a larger percentage of students suffer psychic trauma or worries about *possible* physical disease than about the actual presence of some physical ailment. Students were much more disturbed by the possibility of developing disease than by the presence of proven organic pathology in themselves. One student states, "I worry about carcinoma of the colon because I had alternating diarrhea and constipation for a time. This followed a lecture on malignancy."

48. Have you had any physical or laboratory tests made to determine the presence of disease in yourself? If so, specify.

47 per cent of seniors had special physical and laboratory tests during their medical course not required by their medical school curriculum. This number correlates well with the data discussed under question 47. The tests most frequently done were Wassermann reactions, electrocardiograms, heart and lung X-rays, gastrointestinal studies and microscopic examination of seminal fluid.

49. *In what part or system of the body have you been most apprehensive of developing disease in yourself and why? What disease do you fear most and why?*

The following represents a summary of the replies by systems:

Lungs and Chest: 33. Of this number 5 had tubercular lesions by X-ray study. 3 stated that they had had either tuberculosis or other pulmonary disease. 2 stated that there was a family history of tuberculosis.

Cardiac: 15. Of this number 8 cited some real or imaginary symptoms referable to the heart. 6 had a family history of cardiac disease and 1 had had endocarditis.

Renal: 4. 3 gave a history of albuminuria.

Gastrointestinal Tract: 3. 1 had had an appendectomy, another suffered from chronic constipation.

Brain or Mental Disease: 3. 2 gave no reason. 1 said he feared it because of the hopelessness of the prognosis.

14 had fears involving more than one system while the remainder feared a variety of disease processes, including rheumatic fever, blood dyscrasias, deafness, eye diseases, etc. 1 student feared disease of the genital organs "because of the importance of sex. It would spoil much of the best in life."

In the second part of the question, "What disease do you fear most and why?", 86 students named a disease entity. The most frequent were as follows: tuberculosis, 23; malignancy, 17; syphilis, 15; "chronic disease," 4; "heart disease," 3; and encephalitis, 2.

• The remainder feared a wide variety of diseases including hypertension, uremia, arteriosclerosis, neuroses, etc.

Tuberculosis: Of those fearing tuberculosis, three offered no reason for their fear. The others suggested family history, exposure, possible previous infection and a few mention probable symptoms. Poor prognosis was frequently alluded to.

Malignancy: 2 gave no reasons for their fears. 5 have had family history of malignancy. The remainder suggested fatal outcome, hopeless prognosis and the lingering aspect of this disease.

Syphilis: The hoplessness of cure, terrible sequelae and danger of transmitting the infection to family were offered by the group fearing syphilis.

Chronic Disease: Because of usual long chronicity with fatal prognosis and outcome.

Heart Disease: Family history, probably symptoms or acute infection were mentioned most frequently as cause for fear in this group.

Encephalitis: Hopeless prognosis and dreaded sequelae constituted reasons for the 2 students who fear this disease.

Among the most common reasons for those fearing other diseases, family history was the most important. Present infection or symptoms was also mentioned frequently. Fatal prognosis and hopelessness as far as therapy is concerned worried a large number.

The fear regarding syphilis is expressed in the reply of one student who wrote, "I fear syphilis most because I some day want to marry and expect to have healthy children with six foot sons."

50. Have you worried about any possible hereditary taint? Name it.

26.5 per cent were worried about the possibility of hereditary taint. Most of these fears related to cancer, lues and insanity. In some instances in which fear of insanity played a part the student elaborated his answer in such a way as to indicate that some member of his family or someone in his collateral ancestry had suffered from mental disorder. One student replied, "I am worried about developing senile dementia, it is irreversible."

51. Do you worry at all? Do you worry more than the average student over your work or are you quite confident?

53 students stated that they worried considerably but that they felt that their worries were not more marked than average. Student 99 states, "Yes. I am worried but I think I do better work when I am worried." Student 6 puts his worries on an economic basis, stating, "I have been constantly worried about my financial state and I worry a great deal over my work, probably more than average." Student 90 says, "Yes. I worry considerably because I feel more insecure I believe than the average student."

52. What was your reaction to your dissecting room experience? Did the odors nauseate you? Did the sight of the cadavers repel you? Did the handling of the cadavers bother you?

25 per cent of seniors had been upset by their dissecting room experiences. This figure does not include the usual normal reaction which one might feel at the first contact with human cadavers. Among the reactions that were felt intensely were squeamishness, apprehension, tension, fear, disgust and awe. One student stated,

"Of course, I was upset by the first experience in skinning a human." In this question, certain psychasthenic traits seemed to be brought to the surface. Some of the students were more emphatic regarding the repulsion which they experienced and these obviously over-emphatic replies correlated with our impression of the total personality of the student.

53. *Did any lecture or course of lectures or demonstrations produce neurotic symptoms in you? Describe.*

11 per cent of students felt that certain courses produced neurotic symptoms. It was hoped that out of the replies of all of the students to this question there would come certain constructive suggestions regarding methods of teaching which would serve to minimize the emotional stress of that clinic or course of lectures which may have been responsible for implanting certain fears. Student 117 stated, "I felt that gynecological dispensary was the most disgusting place I had ever been. Women are so pretty on the outside with G. C. on the inside." Student 115 said, "Yes. In the second year lectures on pathology I became worried over my nephritis which occurred eight years ago. This was especially severe after I had a trace of albumin in the urine." Student 58 stated, "Yes. Demonstrations of removal of cataract from the eye almost nauseated me. I dread to see another." Another student, 26, commented, "Yes. I wondered if I were neurotic when Doctor Strecker talked about day dreaming."

54. *Was the chemistry of the saliva, the gastric contents, the urine, the feces repulsive?*

26 per cent of seniors indicated in their replies some neurotic reactions to the examination of these substances. Of course, not all of this 26 per cent could be regarded as psychasthenic. A certain amount of repulsion was considered normal. Student 66 reacted in a striking way as follows: "Examination of the sputum and feces causes difficulties in my G. I. tract. *I do not like filth on my hands.*"

55. *What was the most pleasant and the most unpleasant experience you have had in the study of medicine?*

It is interesting that most of the pleasant experiences had to do with some praise or recognized success in diagnosis or treatment; and that most of the unpleasant experiences related to some personal criticism, failure or error in diagnosis and treatment. In a very

few instances was the most pleasant or the most unpleasant experience related to anything except some success or failure. This response of the student seems of the greatest importance. It indicates the tremendous importance of the personal relationship between student and the teacher as tending to make for satisfaction or unhappiness in medical school. We hope to make this the subject of a separate presentation.

56. Did you wonder whether you had the courage to study medicine?

25 per cent of seniors doubted at some time in their careers whether they had the courage to study medicine. There did not seem to be any close relationship between affirmative answers to this question and neuroticism of the student.

57. Did or does the watching of autopsies invite morbid thoughts? Did you or do you avoid or feel inclined to avoid performing or assisting at autopsies?

20 per cent of seniors felt that autopsies invited morbid thoughts and felt somewhat inclined to avoid performing or assisting in them. In our total impression of the student's personality an affirmative answer to this question did not bear a great deal of weight unless the student elaborated his morbid ideas in a way which was definitely neurotic.

58. Were you tardy on obstetrical cases hoping that the baby would be born before you arrived?

100 per cent of seniors answered this question in the negative.

59. Did contact with venereal patients arouse fears in you? If so, specify.

29 per cent of seniors had fears aroused by contact with venereal patients. This figure does not include the affirmative replies which would indicate normal careful precautions. Student 79 says, "Yes. I developed a syphilophobia."

60. Did animal experimentation distress you?

The replies to this question will be discussed in a later contribution.

61. Were you attracted to or did you avoid surgical operations?

85 per cent were attracted by surgical operations. This is in contrast to the rather remarkably low number (11 per cent) of seniors who had hoped to enter surgery as a specialty.

62. Were you embarrassed in making physical, gynecologic or rectal examinations? Specify.

34 per cent of students were embarrassed in making physical, gynecological and rectal examinations. Many of the students elaborated this in a significant manner. For example, student 101 states, "Yes. All three. I had a feeling that the patient knew that I did not know much about it and was averse to my examining him."

63. Were you distressed by certain medical conditions in patients? Please specify.

66 per cent of seniors were distressed by certain medical conditions. In elaboration of these replies almost all of the students stated that those illnesses which were chronic and hopeless and those accompanied by great pain and suffering distressed them. For example, student 60 stated, "Mental patients at first did not seem human and yet were not quite like animals. It is distressing to try to express how I felt. I saw a man dying of lympho-sarcoma and our helplessness and the tragedy to the family was very distressing."

64. Have you feared or do you fear the study of psychiatry? Were you afraid you would find something abnormal in yourself?

17 per cent of seniors had a fear of the study of psychiatry. Almost all of this number feared that they might discover some tendency in themselves toward mental disease or some indications of the existence of markedly neurotic reactions. Student 75 says very briefly, "I was afraid I might find something wrong with myself."

65. What was your reaction to your first experience with chronic or hopeless disease?

The great majority felt helpless. Many were stimulated to research and the most frequent replies indicated a marked degree of sympathy. Witness for instance the following significant remark, "Desire to relieve them. Put them out of their misery by morphine sulphate, grains two."

66. Does fear of error in your diagnosis or in your prescription writing handicap you in your work?

29 per cent felt that fear of error in diagnosis and prescription writing was of such a degree that it handicapped them in their work.

67. Has a feeling of guilt arising from your diagnosis or treatment ever arisen? How much and for how long a time has it worried you?

32 per cent had a feeling of guilt about diagnosis and treatment and worried for some considerable time over their supposed errors. A fairly large percentage experienced some feeling of guilt rela-

tive to a mistaken diagnosis when actually no responsibility rested on the student for either diagnosis or therapeutic management. Student 75 made the following statement: "Yes. I once injected alcohol thinking it was a local anesthetic. That has bothered me for months." Another student, 66, stated, "Once when I feared that improper treatment killed a cardiac patient. I have submerged this feeling fairly well as it happened six months ago."

68. What subjects did you cordially dislike or dread? Why?

62 per cent of seniors had a dislike or dread of one or more courses in the curriculum. 26 per cent had no specific dislikes, while 9 per cent of answers were not considered definite enough to warrant conclusions. By far, the most common reason given was the manner in which the course was presented to the class. Statements or phrases such as these are typical, "poorly presented," "lectures were uninteresting," "course was poorly organized," "teaching could have been improved upon."

The attitude of the instruction staff to the students was the next most frequent reason given. Typical reactions to the personnel of the instruction staff are the following: "poor attitude of incompetent instructors," "never liked it much and they rubbed our noses around on the floor in there," "nasty instructors." The manner in which class work was organized was also criticized frequently. Statements such as these were noted, "too much theory," "course is too scientific" and "no need for such a detailed course."

Difficulty in grasping the subject matter and fear of failure were mentioned quite often. The following statements represent the attitudes of those who had feelings of inadequacy: "Course was hard to get," "incapable of doing these," "don't know why it is that I am not a good diagnostician."

A few students admitted a lack of training in fundamental sciences prior to medical school—chemistry and physics were most frequently mentioned. Emotional reactions were quite common, "grinding and chipping bone is most unpleasant," "fear of touching cadavers. It seems so brutal." "I dread causing pain or discomfort to patients." Hopelessness of prognosis and therapy in certain diseases was another reason for dislike. A few admitted no interest in microscopic or laboratory work.

69. Were you best in oral or written quizzes?

35 per cent were best in oral examinations.

70. *Do you feel that you have been severely criticized by students, professors or patients? Was it fair or unfair? How did you react to it?*

26 per cent of seniors felt that they had been severely criticized by students, professors or patients. The majority felt that it fair criticism and their reactions to it were constructive. In only a few instances did it seem that the professor had made a deep impression on the student through some unwarranted person criticism. One or two students possessing mild paranoid reactions developed bitterness and resentment. A few stated that they reacted badly to the criticism but that on thinking it over they learned a lesson from it.

71. *Did you think that any professor, teacher or classmate purposely added to the difficulties of your course?*

16 per cent of seniors felt that professors or other students had probably added to their difficulties. Very few students who answered this in the affirmative elaborated their replies, by giving the name of the professor or the course, in which they felt unfairly treated. Student 2 states, "I thought the professor in X made the course difficult but not for me in particular." Student 16 makes the following comment: "Yes. X instructor allowed his personal feelings at the time of my examination to influence his oral examination of me. I do not think it was a personal bias except that the gentleman is of a plethoric disposition, dyspeptic and it was a very hot day." Student 97 answers in the affirmative, "Yes. Professor X. There was a mutual understanding of our dislike for each other."

72. *Does suffering and misery of patients depress you? Does sympathy interfere with your clear consideration of the case?*

49 per cent were depressed by the suffering and misery of the patients. Only a few felt that sympathy interfered with a clear consideration of the case. Most students were successful in obtaining an objective point of view.

Student 63 expresses himself as follows: "Suffering and misery depress me terribly but I think I can keep my mind clear about the case if the suffering is not too agonizing."

73. *Has your emotional equilibrium been upset or stabilized since you began the study of medicine? Please specify.*

76.5 per cent of seniors felt that their emotional equilibrium had been definitely stabilized since undertaking the study of medicine.

This is of interest in relation to question 1 in which 77 per cent of seniors reported that they had at some time or other in the course of their medical career experienced neurotic symptoms. It is likewise important in relation to question 23 in which 90 per cent of seniors felt that they had become more self-confident during their medical school careers. Only two seniors reported that they had become more unstable during the study of medicine.

74. Are you embarrassed or self-conscious in the presence of superiors?

59 per cent of seniors were embarrassed or self-conscious in the presence of superiors. Student 66 makes the following comment: "I am slightly embarrassed and self-conscious depending on the attitude of the professor. I do not believe that they are superior but just more experienced."

75. What is your present academic standing in the class (upper, middle or lower)? Do you feel that physical illness, nervous symptoms, worries, family stresses or other outside influences have lowered the standing which your ability warrants? If so, explain.

Very few students felt that they would have attained a higher academic standing if it had not been for external stresses and worries. Some students frankly admitted that their neurotic symptoms had interfered with the attainment of a satisfactory scholastic average.

The responses in the questionnaire fall into three broad, readily recognizable groups—normal, neurotic and pre-psychotic. It was possible, however, to divide the neurotic group into three subdivisions, the mildly neurotic, the definitely neurotic and the markedly neurotic.

Group I.—We considered students placed in this group as normal. In this group we allowed a moderate amount of sensitivity and slight instability. There could be, for example, self-consciousness or slight anxiety, occasional palpitation, indigestion or headache which had no persistence and which we regarded as of little fundamental significance. 36 students (31.6 per cent) of the 114 members of the senior class acceptable for study were placed in this group; and of this number 18 were wholesomely influenced, 8 unaffected, and 1 was affected unfavorably. In 9 there were temporary neurotic symptoms such as slight anxiety, indigestion, palpitation, etc., which were precipitated by medical school but they were in general helped.

Group II.—We regarded students placed in this group as mildly neurotic. They gave a history of definite episodic neurotic reactions occurring some time during the study of medicine. These had not persisted and had been successfully dealt with. It is perhaps true that at some time during the medical course the student whom we placed in this group might have been considered mildly unstable. Nevertheless, our present evaluation of the student's personality arrived at through analysis of the questionnaire is that he is normal. 25 students out of 114 (21.8 per cent) fall into this group. Of this group 13 seemed to have experienced temporary emotional upsets as a direct result of medical school experiences. 9 seem to have been helped personally and to have derived some stability from their professional acquisitions and to attain better social adjustments.

Groups I and II, then, may be considered as stable.

Group III.—In this group we included those whom we regarded as definitely neurotic. We found adequate evidences of definite, persistent instability which was not overcome and which was a burden or handicap to the individual. We felt, however, that the student could "carry the load" or "make the grade" in the future. We felt that it did not greatly interfere with his professional accomplishments or social adaptation. 22 students (19.4 per cent) we placed in this classification. There were 16 of these students who were either not helped or were made more neurotic during their medical school careers. Only 4 seemed to have derived some help with emotional problems or in their social adjustments. 9 experienced major upsets early in the four year course but were helped toward stability in the later two years. It is evident that more students in this group were helped than in group IV and this is perhaps an indication that they may be more susceptible to help since they suffer from a milder degree of neuroticism than the students in groups IV and V.

Group IV.—After careful analysis of the questionnaires, there were found to be a rather large number of students who presented markedly neurotic symptoms in more than one system of the body or marked psychological neurotic manifestations. Those students who were not only definitely handicapped but about whose futures we felt uncertain we placed in this fourth classification. Our impression was that the student thus classified would suffer from emotional maladjustment in his personal life and in his professional

career. The neurotic instability of this group we felt would be a distinct hardship and would interfere with professional attainment. 28 students (24.6 per cent) fell into this classification. Of this group 24 seem to have been made more neurotic and unstable as a result of the stresses encountered in the study of medicine. Only 4 seemed influenced in neither positive nor negative ways directly by medical school experiences. In only 6 could we feel that the professional technique and vocational training acted in any way constructively or in such a way as to neutralize the personal disorganization which medical school stresses seemed either to have produced or seriously aggravated.

Group V.—In the fifth group we placed a very few markedly unstable individuals, who were seriously disorganized, and in whom we felt the prognosis was precarious. The instability was grave and the outlook for the future decidedly clouded. Only 3 students (2.6 per cent) of the 114 were classified in this division. This group was so small that helpful inferences could scarcely be drawn from their reactions under the stresses of medical education. Nevertheless, 2 were certainly rendered more unstable and 1 suffered a considerable aggravation of a constitutional emotional disorder.

The following chart represents the standards of classification:

Group. (neuroticism).	Degree of instability	Frequency.	Prognosis.	Results in senior class of 114.
I. Normal. . . .	Occasional. Slight.	Good.	31.6%
II. Mild. . . .	Episodic. Temporary interference.	Good.	21.8%
III. Definite. . . .	Fairly constant burden.	Good. We feel certain handicap can be carried.	19.4%	
IV. Marked. . . .	Permanent handicap. . .	Doubtful. We feel uncertain whether handicap can be carried.	24.6%	
V. Serious. . . .	History of a severe at- tack (<i>e. g.</i> , true de- pression) or pres- ence of permanent or severe instability.	Precarious		2.6%

In the broad sense groups I and II may be regarded as essentially normal or non-neurotic. This means that 61 students or 53.5 per cent of the senior class are free from symptoms which we regard as neurotic.

It is interesting to note that of the 88 seniors who felt that they had neurotic symptoms we ruled out 27 as not genuinely neurotic in character. This illustrates the acceptance by us of a fair number of symptoms thought by the student to be neurotic but so mild and so common that we regarded them as within normal limits.

53 students or 46.5 per cent of the senior class we have regarded as unstable, or as possessing neurotic reactions which would burden them throughout life or which in all probability would impair their personal efficiency. We realize, however, that it is entirely possible that good creative work may be done by the most neurotic persons. Each of us has under his care at the present time graduate students, teachers, practicing physicians and excellent medical research workers who suffer from profoundly neurotic illnesses and yet are recognized as preeminent in their fields.

We made an attempt to differentiate the types of neurotic reactions presented by the 53 students in groups III, IV and V. We find that 30 students (52 per cent) are classifiable as neurasthenic or hysterical reactions, those presenting primarily somatic complaints and suffering from conversion phenomena. In addition, there were 6 students who suffered from proven organic diseases from which their neurotic reactions took origin. 17 students (32 per cent) of the 53 presented compulsive, anxiety or psychasthenic states.

Only 26 students denied the presence of neurotic symptoms and of this group only 3 were thought by us to belong to the neurotic types. This, again, is an evidence of the surprisingly clear and frank replies consistently present throughout the papers and an indication of the reliability of the answers. Close checks of this character again and again affirm our opinion that the replies possess an integrity and give evidence of an ability for personal evaluation quite beyond the reliability attributed ordinarily to the questionnaire.

It appears, in the light of our findings, that no neurotic person should enter medical school with even a remote hope that somehow the acquisition of a respected professional standing and vocational training will bring about personal stability. It seems to emphasize

most strongly the emotional stresses inherent in medical education. The whole result can possibly be summarized in some such way as this: students possessing inherent personal stability can probably go through those emotional stresses encountered in a medical school career without serious hazard and with a considerable likelihood that they will emerge well equipped in professional skill, better emotional stability and social adjustment. Those students possessing neurotic trends or frank emotional instability are facing a serious hazard in attempting medical education.

Various estimates regarding the frequency of emotional maladjustments among college students seem to indicate that between 10 and 16 per cent of freshmen suffer from personality difficulties. Blanton¹ studied a thousand juniors and seniors at the University of Wisconsin. His results indicated that more than 10 per cent of the students suffered from emotional disturbances "sufficient to warp their lives and in some cases cause mental breakdown unless properly treated." Cobb² of Harvard examined all incoming freshmen from a psychiatric standpoint and found more than 16 per cent in danger of becoming victims of neuroses, if not actual mental disease. Morrison and Diehl,³ at the University of Minnesota, found 18 per cent of 1300 freshmen affected by emotional disturbances serious enough to warrant mental hygiene supervision and treatment. Angell⁴ states that only 14.4 per cent of students possess a good life adjustment. How this compares with the general run of the population we cannot say, but the fact that Doctor Angell regards 86 per cent of the people he studied as emotionally maladjusted is startling. Pressey⁵ studied 100 women at Ohio University and reports 88 per cent with at least one problem that could be considered serious from the standpoint of mental integrity. It does not seem, then, in an evaluation of the emotional status of senior medical students, that there occurs any greater frequency of neurotic reactions than in the larger undergraduate bodies.

Our study of the emotional stresses encountered by the student in medical education shows a noteworthy frankness and honesty which validate conclusions drawn by careful psychiatric study.

The occurrence of neurotic characteristics among medical students is no greater than the published data on undergraduate problems would imply. It is, nevertheless, evident that a serious mental hygiene problem exists in medical school when a careful analysis

by four psychiatrists reveals that slightly more than 46 per cent of senior students in a representative medical school suffer from neurotic handicaps of major character.

The question naturally arises in the minds of all of us: Can this 46 per cent be reached in a constructive way? Can there be any helpful suggestions which may alleviate the stresses of medical education?

We believe that medical school teaching in particular involves an emotional relationship with the student and that by conscious effort certain hazards to the emotional organization of the student can be overcome.

A surprisingly high percentage of introverts was found in our study of 114 senior medical students. Introverts do not seem to possess any more serious tendencies toward instability than extraverts.

An impressive number of unstable personalities appear to be rendered more unstable and insecure as a result of medical school experiences.

While physical disease was relatively rare, there was, nevertheless, a considerable number of students whose anxieties and fears revolved about the possibility of the development of disease in themselves.

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MORTALITY AMONG PATIENTS WITH INVOLUTION MELANCHOLIA.

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Patients with mental disease have a rate of mortality greatly in excess of that of the general population. There is much variation in this respect, however, among the individual groups of psychoses. In general, the death rate is highest in the organic groups of psychoses and lowest in the functional types. Thus we find that whereas all patients in the New York civil state hospitals had an average annual "crude" death rate of 86.8 per 1000 exposures during 1929-1931, the rates were 403.3 for the senile group, 394.4 for those with psychoses with cerebral arteriosclerosis, and 218.5 for general paretics. On the other hand, the functional groups had rates below the average; *i. e.*, dementia praecox, 32.4; paranoia, 48.2; psychoses with psychopathic personality, 30.8.¹ To this general order, there is one noteworthy exception. Patients with involution melancholia had a rate not only higher than that of all other functional groups, but well above the average for all patients with mental disease. This is such an outstanding result, that it merits detailed consideration.

Involution melancholia is a term applied to depressions arising during the involutional period. The depressions, according to the late Dr. George H. Kirby,² are probably related to those of the manic-depressive group but there are features of the development of the symptoms that are peculiar to involution melancholia, and that therefore justify the separation of the two types.³ The two groups are further characterized by clear-cut differences in age distribution. Patients with involution melancholia resident in the New York civil state hospitals on April 1, 1930, averaged 58.8 years of age, 12 years older than the patients with manic-depressive psychoses. The range of variation was much greater among the latter, the coefficients of variation being 31.3 and 16.1 per cent for patients with manic-depressive psychoses and with involution melancholia, respectively. The latter therefore represent a group of

a relatively advanced age. They are not so chronic as patients with manic-depressive psychoses, as judged by average periods of residence, and they are far less chronic than patients with dementia praecox. The latter condition favors a relatively high death rate.

The complete age distribution of the patients with involution melancholia is shown in Table I.*

TABLE I.

RESIDENT PATIENTS WITH INVOLUTION MELANCHOLIA IN THE NEW YORK CIVIL STATE HOSPITALS, APRIL 1, 1930, CLASSIFIED ACCORDING TO AGE.

Age (years).	Number.			Per cent.		
	Males.	Females.	Total.	Males.	Females.	Total.
30-34	1	2	3	0.4	0.3	0.3
35-39	1	6	7	0.4	0.9	0.7
40-44	10	30	40	3.8	4.4	4.2
45-49	27	96	123	10.2	14.1	13.0
50-54	39	132	171	14.7	19.4	18.1
55-59	73	119	192	27.4	17.5	20.3
60-64	62	123	185	23.3	18.1	19.5
65-69	29	86	115	10.9	12.6	12.1
70-74	13	53	66	4.9	7.8	7.0
75-79	7	24	31	2.6	3.5	3.3
80 and over....	4	10	14	1.5	1.4	1.4
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total.....	266	681	947	100.0	100.0	100.0

In the three years ended June 30, 1931, there were 398 deaths in the New York civil state hospitals among patients with involution melancholia, of which 133, or 33.4 per cent, occurred among males, and 265, or 66.6 per cent, among females. The average age at death was 60.0 years. There was little difference between the sexes, males and females averaging 60.9 and 59.4 years, respectively.

The average annual death rate among patients with involution melancholia was 132.4 per 1000 exposures, † which, in comparison

* The diagnosis of involution melancholia was made in accordance with the classification adopted by The American Psychiatric Association in 1934, and each case was so diagnosed in the hospitals by the clinical director after consultation with the medical staff.

† Some patients are present at the beginning of the year, but may be discharged before the close of the year. Others are admitted during the year and hence are present for only varying portions of a year. As death rates

with the death rate of the population of the State of New York, gave a ratio of 11.3 to 1. Male and female patients had average annual death rates of 156.6 and 122.8, respectively, giving ratios of 12.4 to 1 and 11.5 to 1, when compared with the death rates in the corresponding general populations.

Death rates among the patients are shown by broad age groups in Table 2.

TABLE 2.

AGES OF PATIENTS WITH INVOLUTION MELANCHOLIA DYING IN THE NEW YORK CIVIL STATE HOSPITALS DURING THE FISCAL YEARS 1929-1931, INCLUSIVE, AND AVERAGE ANNUAL DEATH RATES PER 1000 EXPOSURES.

Age (years).	Number of deaths.			Per cent of total deaths.			Average annual death rate per 1000 exposures.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
35-44	5	16	21	3.8	6.0	5.3	143.4	139.1	140.1
45-54	25	83	108	18.8	31.3	27.1	120.9	115.4	116.6
55-64	66	90	156	49.6	34.0	39.2	153.4	117.7	130.5
65-74	27	49	76	20.3	18.5	19.1	196.9	111.9	132.2
75 and over....	10	27	37	7.5	10.2	9.3	267.7	235.7	243.6
Total.....	133	265	398	100.0	100.0	100.0	156.6	122.8	132.4

At 35 to 44 years there was an average annual death rate of 140.1 per 1000 exposures. The rate fell to a minimum of 116.6 at 45 to 54 years. Thereafter the death rate grew steadily to a maximum of 243.6 at 75 years and over. The male mortality curve showed similar convexity, the death rate decreasing from 143.4 at 35 to 44 years to 120.9 at 45 to 54 years, and rising thereafter to a rate of 267.7 at 75 years and over. Among females the death rate fell from 139.1 at 35 to 44 years to 115.4 at 45 to 54 years, and then rose (except for a probably accidental decrease at 65 to 74 years) to a maximum of 235.7 at 75 years and over. It should be noted that the male rates exceeded those of the females at all ages.

are based upon the assumption that a population is observed for a complete year, it is necessary to convert shorter periods of residence into an equivalent number of years. These are called exposures. For a technical description see reference (1), pages 18-23.

Corresponding rates are shown for the general population in Table 3 together with ratios of the patient death rates to those of the general population of same age.

TABLE 3.

DEATH RATES, BY AGE GROUPS, AMONG PATIENTS WITH INVOLUTION MELANCHOLIA IN THE NEW YORK CIVIL STATE HOSPITALS, AND IN THE GENERAL POPULATION OF THE STATE OF NEW YORK IN 1930, WITH RATIOS OF CORRESPONDING DEATH RATES.

Age (years).	Average annual death rate* among patients with involution melancholia.			Annual death rate † in general population of New York State.			Ratio of death rate among patients to that of the general population.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
35-44	143.4	139.1	140.1	7.6	5.6	6.6	18.9	24.8	21.2
45-54	120.9	115.4	116.6	16.0	11.3	13.7	7.6	10.2	8.5
55-64	153.4	117.7	130.5	32.2	24.9	28.5	4.8	4.7	4.6
65-74	196.9	111.9	132.2	62.7	52.9	57.6	3.1	2.1	2.3
75 and over.....	267.7	235.7	243.6	144.0	134.3	138.5	1.9	1.8	1.8

* Per 1000 exposures. † Per 1000 population.

At 35 to 44 years the death rate of the patients bore a ratio of 21.2 to 1 to that of the general population. The ratio then decreased rapidly and steadily to a minimum of 1.8 to 1 at 75 years and over. Among males the ratio decreased from a maximum of 18.9 to 1 at 35 to 44 years, to a minimum of 1.9 to 1 at 75 years and over. Females had a ratio of 24.8 to 1 at 35 to 44 years, and a minimum of 1.8 to 1 at 75 years and over. The female ratios exceeded those of the males at 35 to 44 years and at 45 to 54 years, but the male ratios were slightly higher thereafter.

Much of the excess of the general death rate of the patients results from the fact that a large proportion are at age levels where the mortality rates are highest. In order to avoid the undue weighting of specific death rates resulting from differential age composition, we may resort to the use of standardized death rates. Because of the broad age groupings, this can be done with only approximate accuracy, but the results undoubtedly express the correct trend. The population used as standard was that of New York State, aged

35 and over on April 1, 1930, according to the federal census of that date. The death rates are shown in Table 4.

TABLE 4.

DEATH RATES AMONG PATIENTS WITH INVOLUTION MELANCHOLIA AND IN THE GENERAL POPULATION OF THE STATE OF NEW YORK, 1930.

	Males.		Females.		Total.	
	Crude.	Standardized.	Crude.	Standardized.	Crude.	Standardized.
Patient population (A)	156.6±8.4	147.4±8.2	122.8±4.8	128.9±4.9	132.4±4.2	138.6±4.3
General population (B)	12.6±0.03	23.7±0.06	10.7±0.03	18.9±0.06	11.7±0.02	22.3±0.04
Ratio of (A) to (B)	12.4	6.2	11.5	6.8	11.3	6.2

The standardized rates were 138.6 and 22.3 per 1000 population for the patients and the general population, respectively, giving a ratio of 6.2 to 1. The male patients had a standardized death rate of 147.4, giving a rate of 6.2 to 1 in comparison with the corresponding death rate of the general male population. The female patients had a standardized rate of 128.9, which exceeded the corresponding rate of the general female population in the ratio of 6.8 to 1. Despite a considerable reduction in the relative orders of the death rates, patients with involution melancholia continue to show extremely high rates.

In view of the different age limits used in standardizing the death rates, the corrected rates of patients with involution melancholia cannot be compared directly with those of all mental patients, nor with those of patients with manic-depressive psychoses. Comparison of the specific death rates at corresponding ages, however, shows that patients with involution melancholia have death rates approximately twice as high as those of manic-depressive patients, and from two to three times as high as those of all mental patients.⁴

It is thus evident that patients with involution melancholia have a death rate considerably in excess of that of the general population, or of the average death rate for all patients with mental disease. The reasons for this excess will appear from a consideration of Table 5, which classifies the principal causes of death among patients with involution melancholia.

Diseases of the heart represented the outstanding category, including 39.2 per cent of the total deaths. This was also the lead-

ing cause of death in the general population, but among the latter diseases of the heart accounted for only 23.8 per cent of the total deaths. Furthermore diseases of the heart caused an average annual death rate of 51.9 per 1000 exposures among the patients, compared with a rate of only 3.0 per 1000 in the general population. Much of this excess is undoubtedly due to differential age composition, but even on a comparable age basis, the death rate of the patients remains greatly in excess.

TABLE 5.

PRINCIPAL CAUSES OF DEATH AMONG PATIENTS WITH INVOLUTION MELANCHOLIA DYING IN THE NEW YORK CIVIL STATE HOSPITALS
DURING THE FISCAL YEARS 1929-1931, INCLUSIVE.

Cause of death.	Number of deaths.			Per cent of all deaths.			Death rate per 1000 annual exposures.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
All causes	133	265	398	100.0	100.0	100.0	156.4	122.8	132.4
Diseases of the heart.....	55	101	156	41.4	38.1	39.2	64.7	46.8	51.9
Pneumonia (all forms).....	21	33	54	15.8	12.5	13.6	24.7	15.3	18.0
Tuberculosis (all forms).....	8	34	42	6.0	12.8	10.6	9.4	15.8	14.0
Diseases of the arteries.....	13	15	28	9.8	5.7	7.0	15.3	7.0	9.3
Acute and chronic nephritis....	11	12	23	8.3	4.5	5.8	12.0	5.6	7.6
Cancer (all forms).....	2	13	15	1.5	4.9	3.8	2.4	6.0	5.0
Exhaustion	2	11	13	1.5	4.2	3.3	2.4	5.1	4.3
Diarrhea and enteritis.....	1	8	9	0.8	3.0	2.3	1.2	3.7	3.0
Cerebral hemorrhage, apoplexy.	4	4	8	3.0	1.5	2.0	4.7	1.9	2.7
Suicide	2	4	6	1.5	1.5	1.5	2.4	1.9	2.0
All other causes.....	14	30	44	10.5	11.3	11.0	16.4	13.9	14.6

Pneumonia is the second highest cause of death among the patients, but it includes only about a third as many deaths as diseases of the heart. In the general population pneumonia ranked fifth as a cause of death, and included but 6.7 per cent of the total. The death rates were 18.0 and 0.9 per 1000 among patients and the general population, respectively. Similar contrasts are shown by tuberculosis, which ranked third among the patients, but sixth among the general population. This disease was responsible for 10.6 per cent of the deaths among patients and only 5.4 per cent among the general population. The death rates were 14.0 and 0.7 for the patients and the general population, respectively. Despite

the relatively advanced ages of the patients, we find that cancer and nephritis were minor causes of death among them, whereas these diseases ranked second and third among the general population. Nevertheless, the death rates from these causes were higher among patients than among the general population, though the relative excess is less than that arising from the preceding groups of diseases.⁵

A great contrast is shown with patients with manic-depressive psychoses. Among the latter deaths from cardiovascular causes accounted for only 34.1 per cent of the total, compared with a corresponding percentage of 48.2 among patients with involution melancholia.⁶ Among the former, however, there are many deaths from exhaustion arising from the acute condition of the patients. Such deaths accounted for 13.9 per cent of all the deaths among patients with manic-depressive psychoses, but only 3.3 per cent of the deaths among those with involution melancholia. If we omit deaths due to exhaustion, we find that deaths due to cardiovascular disorders accounted for 38.9 per cent of the remaining deaths among patients with manic-depressive psychoses, which is still significantly less than the corresponding percentage in the involutional group. Evidently the physical factors associated with the involution period are correlated with cardiovascular conditions, thus causing higher death rates from the latter causes.

SUMMARY.

Patients with involution melancholia had an average annual crude death rate of 132.4 per 1000 exposures. This is almost twice the rate for patients with manic-depressive psychoses, and four times the rate for patients with dementia praecox. It is the highest rate of any of the functional group of psychoses. On the basis of standardized death rates, patients with involution melancholia had a death rate in excess of that of the general population in the ratio of 6.2 to 1. Among males and females the corresponding ratios were 6.2 to 1 and 6.8 to 1, respectively. Males have higher death rates than females, though the difference is not significant with respect to the probable error.

Diseases of the heart constitute the leading cause of death, being responsible for almost 40 per cent of all the deaths. The death

rate from these diseases is almost eight times the corresponding rate in the general population, when both are corrected for age. Pneumonia was responsible for only a third as many deaths as diseases of the heart. Tuberculosis ranked third as a cause of death. It is noteworthy, however, that the death rate from tuberculosis exceeded that of patients with dementia præcox.⁷

BIBLIOGRAPHY.

1. See "Mortality Among Patients with Mental Disease." By Benjamin Malzberg, Ph. D., Utica, N. Y., 1934. Page 193.
2. See "Statistical Guide." 10th Edition. Published by the New York State Department of Mental Hygiene. Page 18.
3. See "A Text Book of Psychiatry." By D. K. Henderson, M. D., and R. D. Gillespie, M. D. Pages 158-181.
4. See reference (1), pages 124 and 27, for death rates of other groups of patients.
5. See reference (1), page 38, for death rates of the general population.
6. See reference (1), page 131.
7. For relation of tuberculosis and dementia præcox, see reference (1), pages 98-103.

Correspondence.

INQUIRY ON THE "SAFE PERIOD" BY THE NATIONAL COMMITTEE ON MATERNAL HEALTH, INC.

TO THE EDITOR:

In line with our interest in "medical aspects of human fertility," we are impressed by the extensive and increasing interest in and reliance upon the so-called "safe period" as a means of contraception. There is urgent need for determining, as accurately as possible, whether there exists, for the regularly menstruating woman, a predictable and reliable moiety of her cycle in which fertilization is impossible. The National Committee on Maternal Health is undertaking to collect pertinent data which, by reason of their source, will be of exceptional value.

We seek to enlist specially qualified married couples who will scrupulously keep and transmit to us—confidentially, of course—accurate and complete records of menstruation and coitus over a long period of time, several years if possible. We suggest, though not exclusively, couples of whom one or both are, say, physicians or graduate students or faculty members or research workers in biologic or other scientific departments, therefore competent to furnish trustworthy records and also scientifically interested in contributing to this investigation.

A couple such as we wish to enlist would prefer not to have a pregnancy develop during the next year or more, although if one did develop it would not be calamitous. Accordingly, the couple would observe the so-called "safe periods" as their sole means of avoiding conception. If that succeeds, and then the time comes when they desire a child, they would reverse their practice, confining coitus to occasions outside the "safe period," or they would at least restrict intercourse to the moieties of the menstrual cycle when, theoretically, pregnancy is most likely to result, and then record how soon it does result. Needless to say, there must be no known or probable factor of involuntary sterility in either one of the couple.

The frankly experimental character of the coital practices on which these records are based, and the special qualifications of the recorders, will make these data uniquely valuable.

The committee is peculiarly fitted to collect these records. Its territory is large enough to encompass couples in number adequate for the investigation—couples who, by reason of their particular qualifications and their willingness to volunteer, must be few in any one community, no matter how large the latter may be.

On application, we shall distribute to individuals simple record forms and brief instructions easy to follow. We hope to hear from as many as possible who are reached, directly or indirectly, by this announcement. Please address National Committee on Maternal Health, Inc., New York Academy of Medicine Building, 2 E. 103d St., New York, N. Y.

RAYMOND SQUIER, M. D., *Executive Secretary,*
National Committee on Maternal Health, Inc.

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U. S. PUBLIC HEALTH SERVICE HOSPITAL (FEDERAL NARCOTIC FARM), LEXINGTON, KENTUCKY.

Comment.

FEDERAL NARCOTIC FARMS IN THE UNITED STATES.

On Saturday, February 13, 1937, the corner-stone of the administration building of the second United States Narcotic Farm, located at Fort Worth, Texas, was laid with appropriate ceremonies, which were witnessed by a large number of officials and others interested in narcotic problems from various parts of the United States. Congressman Fritz G. Lanham, of Texas, chairman of the committee on arrangements, presided. Assistant Surgeon General Walter L. Treadway, United States Public Health Service, the principal speaker of the occasion, wielded the trowel.

The institution is located on a 1400 acre tract near Forest Hill, about 6 miles from Fort Worth. Under a contract awarded July 27, 1936, work is now proceeding on the first group of structures—an administration building, nurses home, clinical building and maximum custody ward. A second contract has recently been awarded for a second group of buildings, including a dining hall, kitchen, auditorium, power house, two industrial buildings and a water tank.

Congress authorized a total expenditure of \$4,000,000 for the new institution, which will provide 1200 beds, or 200 more than the accommodations at the initial narcotic farm at Lexington, Kentucky, now known as the U. S. Public Health Service Hospital. Funds now available, however, will allow the expenditure of approximately \$2,250,000.

The Fort Worth institution follows a modified cottage plan and is designed primarily to meet the needs of the more tractable types of patients. The Lexington, Kentucky, institution which is already in operation is designed primarily for the care of the more intractable types of persons, largely composed of the prisoner group. The two hospitals represent the leadership of the United States in meeting the problem of hospitalization of narcotic addicts.

The Fort Worth farm probably will be ready to receive patients by the latter part of the next year. Regular career officers of the Public Health Service will staff the institution, while other employees will be named from civil service lists. There will be approximately 250 employees.

The government's initial effort in providing facilities for the care and treatment of narcotic drug addicts took form at Lexington, Kentucky, by the establishment of the first of the two institutions authorized by Congressional Act of January 19, 1929. Construction began in January, 1932, on a site consisting of 1000 acres of excellent Kentucky bluegrass farm land and the institution was completed and opened for operation May 25, 1935. It now accommodates 1000 male patients, and at the present time is filled to capacity. It is contemplated that facilities will be developed later for women addicts as an adjunct to those facilities already provided for men.

There are four classes of persons addicted to the use of habit-forming drugs who are eligible for admission: (1) those convicted of offenses against the United States; (2) those applying for further treatment at the expiration of their sentences; (3) those placed on probation by courts having competent jurisdiction, one condition of probation being that the probationer submit himself for treatment at a narcotic farm until cured; and (4) those who voluntarily seek treatment.

The primary purpose of these institutions is to rehabilitate, restore to health and train to be self-supporting and self-reliant those who are admitted thereto to the end that they may take, when discharged, a useful place in the community. Shops are provided to afford occupation, vocational training and education. Studies are to be carried on to determine the best methods of treatment. Research in this field includes studies on the nature of addiction, attempts to synthesize a non-habit-forming narcotic drug, electroencephalographic studies. These institutions must, because of the functions which they are expected to perform, be represented as medical centers, with all those diversified facilities which the broad activities and interests of modern medical science and the treatment of the physically and mentally sick entail. The problem of the treatment of drug addiction in its present stage involves a chemico-pharmacologic, biochemical, psychobiologic and medical approach.

This is a subject which has vexed physicians more or less ever since it became apparent that the continued taking of opium was harmful and to be avoided or cured if possible. Addiction has obviously been prevalent ever since opium was discovered more than two thousand years ago, but it excited no great interest in medical literature until the early part of the last century. Apparently it was no great problem in western countries before that time, or, if addiction was prevalent to any great extent, it was ignored as being harmless or at least not so harmful as to require the attention of governmental authorities or to give serious concern to physicians. We know, however, through the medium of literature that certain people did take opium to excess. Addiction is also occasionally mentioned in medical literature of remote periods. During the past hundred years there has been an increasing anxiety over the subject on the part of both governmental and medical interests and much has been written about the nature of drug addiction and about cures for it. The invention of the hypodermic syringe and the discovery of opium alkaloids increased the seriousness of the problem in western countries especially, and for this reason a steadily increasing attention has been focused on the subject.

A very considerable proportion of the literature on addiction has been devoted to discussions of withdrawal therapy. Books have been written that are devoted almost exclusively to this alone. Withdrawal therapy is, however, comparatively unimportant. If it occupied as large a place in the drug addiction problem as some authors apparently assume, the problem could be quickly solved.

So-called cures are notoriously followed by relapses. The important thing, then, is to prevent relapses and to so order the handling of narcotics as to prevent innocent or especially susceptible people from becoming addicted. The latter is largely a function of governmental authorities, and much progress in prevention has been made by these authorities during the past 40 years. Prevention is also a function of physicians who, with increased knowledge of disease and the danger of addiction, do not prescribe opiates so freely as they did in the past.

Psychopathic characters and persons in general whose personalities deviate from the normal are especially susceptible to opiate addiction and to relapses after cures. The most important phase of treatment for them is not the physical withdrawal of opium,

but a reorientation of their personalities so that they do not again feel the necessity for seeking relief from the stresses of life by restoring to opiates. The rebuilding of personality cannot be accomplished within a few weeks, and in many cases cannot be accomplished at all.

Theories of the nature of opium addiction, about which practically nothing is known, have been built around "withdrawal" symptoms, and on the basis of these theories some treatments that are claimed to be specific have been advanced. It is well known that anyone addicted to opium suffers from certain symptoms when the opium is withdrawn. Treatments are designed to reduce or eliminate this suffering and also to obliterate permanently the craving for opiates. Claims about the latter are made, however, only by persons who have had very little experience in the handling of drug addicts.

The "withdrawal" of opium is one of the simplest procedures in medicine. This, together, with the fact that addicts vary greatly in their reaction to withdrawal, explains in part why so many treatments have been and still are being invented for this condition. Another reason is that many addicts when presenting themselves for treatment either have a very mild habit or have been deprived of their favorite opiate for several days and are, therefore, almost over the withdrawal period when first seen by a physician, who may not take these factors into account and who consequently attributes the mild withdrawal symptoms to the "treatment" used.

About 20 per cent of any large group of relapsing addicts will truthfully report that they have had many treatments and that some time during their addiction careers they have, without any assistance from physicians, "kicked" the habit at home, showing, of course, that the process is not impossible. Addicts who have strong habits and even those who are mildly addicted react very differently to withdrawal treatment. Some will suffer uncomplainingly; others, especially certain temperamental individuals or individuals whose desire for treatment is not strong, will whine and complain bitterly as soon as they begin to feel restless or otherwise uncomfortable. Some, who vomit, are very restless and have mild twitchings or other symptoms showing that they are going through severe withdrawal, will declare that they are doing very well; others, who have scarcely any objective symptoms of discomfort,

will complain bitterly especially if they feel there is a chance that the physician in attendance will either give them morphine or increase the dose that he has been prescribing.

Treatment of withdrawal may be divided into three main groups—abrupt withdrawal, rapid withdrawal and slow withdrawal. Practically all of the so-called specific treatments have been grafted on the abrupt withdrawal or rapid withdrawal methods. The slow withdrawal method was practically in universal use until about 45 years ago. By this method patients were treated over a period of a month or two, or even longer, by gradually reducing the amount of opiate that they had been taking. It was the method of choice when addicts were treated mainly at home, and it often resulted in complete cure. It is stated that by this method addicts were taken off drugs with very little suffering. Objections to the treatment are that it unnecessarily prolongs the suffering, even though this is mild, and that the patient is likely to change his mind before the treatment is concluded. Many patients treated by this method deliberately cheated; in other words, they deceived their physician by getting a supply of the drug surreptitiously. The slow withdrawal method is now frowned upon by physicians as well as by the authorities. Modifications of this method are still used to a certain extent in sanitaria, not because the physician in charge thinks it is the best method, but because in many cases it is the only method that the patient will accept. It often fails even in sanitaria.

Abrupt withdrawal, so-called "cold turkey," has been used extensively in jails. It was, however, advocated by some observers as being the treatment of choice as long as 50 years ago. This treatment works very well in prisons where patients can be controlled. In young and healthy individuals the worst of the withdrawal symptoms are over within about five days and in about 10 days such patients begin to gain weight. There is less suffering and decidedly less danger with this form of treatment than with some of the so-called specific treatments for which great claims have been made. The abrupt withdrawal treatment is not without a small element of danger in patients who are feeble from age or debilitated by disease, but this danger is minimized if active and correct supportive treatment is given. Illustrations supporting this conclusion may be chosen almost at random from well administered

institutions, such as, for instance, a jail where some 2400 addicts had been withdrawn by the abrupt method without any deaths and with the total expenditure of two $\frac{1}{4}$ grain doses of morphine sulphate given to two old patients to avoid what appeared to be impending collapse.

The method of choice in prisons may not be applicable to sanatoria or hospitals. The sanitarium physician must temporize somewhat with his patient in order to get him to accept treatment at all. Many patients come to these institutions dreading treatment, and they would leave if an abrupt withdrawal should be attempted.

The method of treatment at the Lexington Hospital varies according to indications. Many patients come in who, for reasons already given, do not have very strong habits. These are usually abruptly withdrawn and given only supportive treatment, and most of them suffer very little. Aged patients, or patients suffering with strong habits, are rapidly withdrawn either with morphine in small doses or codeine, or both. The idea is to quickly get them off the opiate they have been using by a method that guards against collapse and prevents excessive suffering. They are also given certain supportives, such as a warm bath of 5 or 10 minutes duration three times a day, 2 drams of paraldehyde in order to produce sleep at night, and for those who do not eat well 1000 cc. of 10 per cent glucose which may be given three times a day. It has been found that these glucose infusions tend to relieve the subjective symptoms for several hours. Salicylates and sodium bicarbonate may also be given according to indications. The results have been very good.

Patients from whom morphine is withdrawn rapidly gain weight beginning about the 10th day. They also quickly regain full body vigor and feel well, except that old men who have had the habit for years take a much longer time to recuperate than young men. Some of the old men lie around without any energy and complain more or less for a month or two before they regain normal physical and mental vigor.

Many tuberculous patients have become addicted through the giving of opiates for cough. Experience at the Lexington institution indicates that such use of opiates is never justified unless the patient has such an advanced disease that death is certain. Tuberculous addicts generally gain weight after the drug is taken away.

In conclusion, it may be said as a generality that nothing is known about the fundamental mechanism of drug addiction, and that all withdrawal treatments based on theories of the mechanism have been failures.

Any treatment that has as a part of it the withdrawal of the opiate will effect physical cure of the addiction.

The treatment of choice, based on present knowledge, is rapid withdrawal in less than a maximum of 14 days, supplemented by supportive measures. This "withdrawal" stage of treatment should be followed by thorough and intensive efforts to correct any and all remediable physical and mental defects in order that the patient may no longer have this apparent excuse for the use of drugs. Next, efforts should be made to assure reasonable stability for the patient after discharge from hospital treatment—to establish satisfactory "plans" for him—because the permanency of the "cure" will depend in the most hopeful cases upon the patient's ability to satisfactorily adjust to the stresses, strains, temptations and vicissitudes to which he will be subjected. More often than not to return the patient to the same environment or situation in which he became addicted or to return him to extramural life without adequate plans and supervision is to make resumption of addiction a foregone conclusion. The fourth major effort is to retain the patient in the hospital long enough to permit him to obtain maximum benefit from this type of treatment and to give him a chance to replace the old bad habits, which were concerned with his addiction, by good habits. The greatest of these is to replace the habit of living with drugs by the habit of living without them. The establishment of any habit takes time. Hence, the time factor of hospital treatment is of itself a factor of major importance and is apt to involve a span of months rather than of weeks or days.

J. K. F.

RETIREMENT OF DR. RUSSELL.

Announcement has been received from the Society of the New York Hospital that Dr. William Logie Russell retired on December 31, 1936, from his position as General Psychiatric Director of the Society of the New York Hospital and was appointed Medical Director Emeritus of the New York Hospital—Westchester Divi-

sion, formerly the Bloomingdale Hospital, and Consulting Psychiatrist to the New York Hospital.

Dr. Russell was born in New Brunswick, Canada, in 1863. He received his medical education at the New York University Medical College in New York City, being graduated in 1885. Having engaged in private practice in New York City from 1888 to 1897 he became First Assistant Physician at Willard State Hospital, Willard, New York, in 1897, remaining there until 1903 when he became Medical Inspector of the New York State Hospital Commission. He retained this position until 1910 when he became Medical Superintendent of the Long Island State Hospital in Brooklyn, New York. In 1911 he was appointed Medical Director of the Bloomingdale Hospital, remaining in this position until 1926 when he became General Psychiatric Director of the Society of the New York Hospital. During the following years Dr. Russell developed plans for the construction and equipment of the Payne Whitney Psychiatric Clinic in connection with the New York Hospital at its new location at 68th Street and York Avenue, New York City. The Payne Whitney Psychiatric Clinic with its modern and well-arranged facilities for psychiatric care in connection with the general hospital will remain as a monument to Dr. Russell's wise foresight and broad vision.

Dr. Russell served as president of The American Psychiatric Association 1931-1932, and in all of the affairs of the Association he has proved a judicious counsellor whose advice has been invaluable and whose views have been held in the highest esteem. His friends will wish him many years of happiness in the enjoyment of life with a relief from its former burdens and responsibilities; there should be much satisfaction to him in the survey of the accomplishments that he has brought about through his many years of activity, not only with the Society of the New York Hospital, but in the wider field of psychiatry in America.

MASSACHUSETTS SITUATION.

To date it is impossible to report any improvement in the regrettable conditions in the mental hospital administration in the formerly banner state of Massachusetts. As indicated in the last issue of the JOURNAL, the blight of political exploitation fell most heavily on the Boston State Hospital, and it is to be hoped that the increas-

ing weight of public and medical opinion will prevent the extension of the mischief throughout the state service.

The entire Board of Trustees of the Boston State Hospital has been replaced by a new Board of the Governor's selection, nearly half of the members of the medical staff were either ousted or have resigned, and numerous other old employees, including the heads of various hospital departments, have been dismissed or have left the service. The unrestrained and disturbing publicity sponsored by the former governor and those favorable to his administration cannot but have a demoralizing effect upon mental health interests in Massachusetts and upon public confidence in the state's protection of those interests, from which it may take considerable time to recover.

It is proposed to present further details of this situation in the next number of the JOURNAL.

THE PASSING OF DR. WHITE.

With the death on March 7, of Dr. William A. White, another of the great pioneers of the modern period of American psychiatry has passed from the scene.

Author of the famous "Outlines" which has gone through 13 editions, joint author with Dr. Jelliffe of "Diseases of the Nervous System," now in its sixth edition, and for 34 years superintendent of the Federal Government's St. Elizabeth Hospital in Washington, which was greatly expanded under his régime, Dr. White exerted perhaps a wider influence than any contemporary American psychiatrist.

He had served the Association as its President and as a member of Council and had been a trusted adviser in the affairs of the Association for many years. The sentiments of Dr. White's colleagues are well expressed in the words of Secretary of the Interior Ickes: "Besides being a great doctor and a preeminent authority in psychiatry and the treatment of mental diseases, Dr. White was a good and kindly man. His untimely death is a severe blow to the medical world in general and to the Department of the Interior in particular." A memorial of Dr. White will be published in an early issue.

The JOURNAL desires to express to Mrs. White its deepest sympathy.

News and Notes.

REPORT OF NOMINATING COMMITTEE.—In accordance with Article VI of the Constitution of the Association, the Nominating Committee herewith reports the following nominations to the membership of the Association, to be acted upon at the annual meeting in Pittsburgh:

For President: Ross McC. Chapman, M. D., Towson, Maryland.

For President-Elect: Richard H. Hutchings, M. D., Utica, N. Y.

For Secretary-Treasurer: William C. Sandy, M. D., Harrisburg, Pa.

For Councillors for three years: Charles Macfie Campbell, M. D., Boston, Mass.; Charles H. Dolloff, M. D., Concord, N. H.; George S. Johnson, M. D., San Francisco, Calif.; Harry C. Solomon, M. D., Boston, Mass.

For Auditor for three years: Robert P. Winterode, M. D., Crownsville, Md.

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APPLETON H. PIERCE, M. D.,

GEORGE H. STEVENSON, M. D.,

C. FRED WILLIAMS, M. D.,

CLARENCE O. CHENEY, M. D., *Chairman.*

ESTONIAN STERILIZATION LAW, COMMENT SUBMITTED BY JAMES E. HUGHES, LL. B., DIVISION OF MENTAL HYGIENE, UNITED STATES PUBLIC HEALTH SERVICE, AT THE INSTANCE OF ASSISTANT SURGEON GENERAL WALTER L. TREADWAY.—A sterilization law was enacted by the Estonian Government on November 27, 1936, a translation of which has come to hand from the *charge d'affaires*, a. i., at Tallinn. It contains some provisions not found in American statutes. Thus it applies not only to the usual mental cases but to persons with serious incurable and inheritable physical defects, authorizes abortion if a female person's health, on account of abnormal sexual inclinations, makes her dangerous to self or community, prohibits initiation of proceedings by a guardian or others who are interested in inheriting the person's property, and prohibits sterilization of persons who have not reached the age of ten years.

General administration is placed under the Minister of Social Affairs with direct execution under a sub-division of public health and welfare. The law's procedure, including the "due process of law" components of notice, right to hearing, and appeal, seems more specific and adequate than under most American laws. Initiation and adjudication are more directly under public health officers than under what might be considered a composite of the American statutes. On the other hand, the law contains an American basic tenet that only hereditary conditions are cognizable. It should be interesting to follow the results of this law in terms of operations performed; but a more interesting comparison with statistics under American laws, which like the Estonian law provide a practically exclusive criterion of heredity, would have been provided if more latitude had been given by the Estonian law for consideration of environmental influences.

In addition to the Estonian law, sterilization laws have been enacted, according to the literature, by the Province of Alberta in Canada, Denmark, Finland, Germany, the State of Vera Cruz in Mexico, Norway, Sweden, and the Canton of Vaud in Switzerland. A survey of American state legislation, including the 1935 regular legislative sessions, shows that there are 32 current American statutes in 28 states.

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THE SUBCOMMITTEE OF THE COOPERATIVE CLINICAL GROUP FOR THE EVALUATION OF NONSPECIFIC THERAPY OF NEUROSYPHILIS.—A committee has been appointed by Surgeon General Dr. Thomas Parran of the U. S. Public Health Service to study and evaluate the various forms of nonspecific therapy (malaria, artificial fever, and other means) which are used at the present time in the treatment of the different types of neurosyphilis. On January 18 and 19, 1937, the committee met in Washington in the office of the Surgeon General and outlined a program for the study. The committee consists of Paul A. O'Leary, M. D., Chairman, Mayo Clinic, Rochester, Minn., Walter L. Bruetsch, M. D., Central State Hospital, Indianapolis, Ind., Franklin G. Ebaugh, M. D., Colorado Psychopathic Hospital, Denver, Colo., Walter M. Simpson, M. D., Miami Valley Hospital, Dayton, Ohio, Harry C. Solomon, M. D., Boston Psychopathic Hospital, Boston, Mass..

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Stafford L. Warren, M. D., Strong Memorial Hospital, Rochester, N. Y., R. A. Vonderlehr, M. D., U. S. Public Health Service, Washington, D. C., and Lida J. Usilton, M. A., Statistician, U. S. Public Health Service, Washington, D. C. The group will work in close collaboration with the Cooperative Clinical Group which has been responsible for a number of important studies in the therapy of syphilis in recent years.

ANNUAL MEETING OF THE SOUTHERN PSYCHIATRIC ASSOCIATION.—Advance notice has been received of the annual meeting of the Southern Psychiatric Association, an affiliate of The American Psychiatric Association, at San Antonio, Texas, October 8 and 9, 1937, under the presidency of Dr. William D. Partlow, superintendent of the Alabama State Hospitals. Dr. George P. Sprague of Lexington, Ky., is vice-president, Dr. Newdigate M. Owensby of Atlanta, Ga., secretary, and Dr. Thomas M. Dorbandt, 205 Camden St., San Antonio, Texas, chairman of Committee on Arrangements.

ANNUAL MEETING OF THE AMERICAN ASSOCIATION ON MENTAL DEFICIENCY.—The sixty-first annual convention of the American Association on Mental Deficiency will be held at Atlantic City, New Jersey, May 5-8, 1937, with headquarters at Hotel Haddon Hall.

In a varied program, including some 35 papers in addition to round table conferences, will be discussed the relations of mental defect and schizophrenia, the question of heredity, administrative problems in the management of training schools, the problem of mental deficiency as presented in the juvenile court, training and treatment measures and the social control of the mentally deficient, the evaluation of tests and statistical records, and various research problems.

Dr. Benjamin O. Whitten of Clinton, S. C., is president of the Association, Dr. Harry C. Storrs, of Wassaic, N. Y., vice-president, Dr. E. Arthur Whitney, Elwyn, Pa., secretary-treasurer, Dr. George B. Thorn of Vineland, chairman of the Committee on Arrangements, and Dr. E. A. Whitney, chairman of the Program Committee.

ANNUAL MEETING OF NATIONAL CONFERENCE OF SOCIAL WORK.—The National Conference of Social Work announces that its sixty-fourth annual session will be held this year in Indianapolis, May 23-29. The opening address will be delivered by Miss Edith Abbott, Dean of the Graduate School of Social Service Administration, the eighth woman president of the Conference since it was founded in 1874. The program is built around five sections and seven special committees. The sections cover social case work, social group work, community organizations, social action and public welfare administration. The committees deal with care of the aged, public health, social aspects of children's institutions, social aspects of public housing, social treatment of the offender, special relief problems and statistics and accounting in social work. In addition more than 50 associate and special groups will hold meetings in Indianapolis during the seven day session. Conference officers for the year 1936-37 are: Miss Edith Abbott, Chicago, Ill., president; Solomon Lowenstein, New York City, first vice-president; T. Arnold Hill, New York City, second vice-president; Ellen C. Potter, Trenton, N. J., third vice-president; Arch Mandel, Dayton, Ohio, treasurer; Howard R. Knight, Columbus, Ohio, general secretary.

POSITIONS IN THE CALIFORNIA STATE HOSPITAL SERVICE.—For the second time in a month, the California State Personnel Board has waived residence requirements in its search for qualified medical men, and is holding an examination which will be open to candidates in all parts of the United States. The position for which the new examination is being given is that of physician and clinical pathologist, paying a salary of \$200 a month plus maintenance for the doctor and his family. The position involves work in the various institutions operated by the State of California.

To be qualified to take the examination, physicians must have a license to practice medicine in the State of California or be able to secure one, and must be graduates of an approved medical school with three years of experience in the licensed practice of medicine with specialization in clinical pathology, bacteriology, and serology, or some other equivalent combination of education and experience. Age limits for candidates are 26 to 50 years. Applications must be filed with the California State Personnel Board, 404 Library-Courts Building, Sacramento, Calif., before April 24, as the examination will be held May 1.

Book Reviews.

THE PROBLEM OF ANXIETY. By *Sigmund Freud*. English Translation by *H. A. Bunker*. (New York: W. W. Norton, Inc., 1936.)

In the first two chapters a very necessary attempt is made to distinguish between inhibition and symptom; necessary because inhibition is a physiologic phenomenon, symptom, a pathologic one. The existence of the latter always raises the question why in the given case persistent illness has resulted in the exercise of normal function.

The riddle of anxiety is scrutinized in minute detail, but apparently toward no fruitful end. On page 120 the original question is asked again: "Why are not all neuroses merely episodes in the individual's development which become a closed chapter when the next stage of development is reached? Whence comes the element of permanency in these reactions to danger? What is the source of neurosis; what is its ultimate, its specific, underlying principle? After decades of analytic effort, this problem rises before us, as untouched as at the beginning."

An attempt is then made to evaluate Rank's contribution toward the solution of the problem of anxiety. According to Rank, "Those persons become neurotic who, on account of the severity of the birth trauma, have never succeeded in abreacting it completely." But here Freud comes to the conclusion that this formula does not conform with reality, and states that on the ground of this very nonconformity he had abandoned the theory of abreaction which had played so large a part in catharsis.

We have, then, in this book, a highly refined speculation of interactions between the Id, the Ego, and the Super-Ego in an attempt to account for the phenomenon of morbid anxiety. Frankly, from the standpoint of a person watching from the sideline, it is difficult to see what gain might be accomplished from such a re-formulation of the clinical data.

A. J. R.

KEEPING YOUR CHILD NORMAL. By *Bernard Sachs, M.D.* (New York: Paul B. Hoeber, Inc., 1936).

In this slim volume Dr. Sachs makes many a pungent comment on a number of timely topics connected with the training and rearing of children. The author is to be congratulated for an ability to present his views in the kind of language which in courts is sometimes referred to as "words which the jury can understand." There is an avoidance of unnecessarily technical vocabulary which will heighten the appeal to the non-professional reader. On the other hand, the subject matter has not been simplified to the point of banality and is not lacking in interest for the practicing psychiatrist.

The first two chapters propound some maxims to be applied in education during infancy, early childhood and the school age. The positive principles laid down in these pages will probably be endorsed by most competent workers in this field. The author does not hesitate to condemn certain teachings as erroneous and harmful. This condemnation is put forward so bluntly that the book is unlikely to receive universal approbation.

The writer deplores undue insistence upon sex as a factor in development and he does not hesitate to deal with such homely topics as feeding habits, hours of school homework, reading, and moving-pictures as a form of recreation.

The chapter on heredity and environment has some practical applications, particularly with respect to the adoption of children by foster parents and the eradication of mental disorders by sterilization. The following quotations will illustrate Dr. Sachs' stand as regards the relative importance of heredity and environment:

"In relation to our immediate problem, the important conclusion is that the bogey of heredity still exists, and from practical experience (adopted children) granting all the influence of heredity, the influence of environment is far greater; but that influence must be brought to bear at a very early day."

"The entire question of heredity has undergone most careful study in a report submitted to the American Neurological Association in June, 1935. The important conclusion is that while granting hereditary influences, environment is still more important; 'many genetic characters remain latent, unless developed or made manifest by some specific factor in the environment.'"

It seems unlikely that this volume will be welcomed by the orthodox Freudian psychoanalyst. On page 52 it is noted that "The Freudians have done an infinite amount of harm to children and young mothers who naturally enough are fascinated by the sex talk of the doctor, if not by the personality of the man to whom transferences be made." Also on page 53 Dr. Sachs states, "I have spoken elsewhere of the direct harm done to children by the exclusive application of Freudian doctrine, but harmful as they often are, my chief objection to them rests upon the fact that parents, teachers and some medical men are so impressed by them that they lose sight of other more and most important environmental factors that furnish the true motivation for many acts of youthful delinquency."

About one-third of Dr. Sachs' book is devoted to a discussion of "the use and abuse of psychoanalysis." This is the part which will be of particular interest to the psychiatrist and psychologist. The author leaves no doubt that he is opposed to psychoanalytic practice, not merely on the ground that it is unscientific but that it is definitely harmful to many patients: ". . . the good resulting from special methods of psychological approach is easily outweighed by the harm done, especially to children, by excessive introspection, disruption of normal mechanisms and by the unwarranted insistence on sex aberrations." Dr. Sachs is of the opinion that "the majority of able neurologists and psychiatrists the world over do not indorse the

Freudian doctrines": this assertion is supported by several quotations and references to authoritative writings.

It may be that the novelist and dramatist have been influenced more by the teachings of Freud than have medical practitioners. A plain-spoken readable work by such a renowned psychiatrist as Dr. Sachs will assist in making available to the lay reader the reasons why psychoanalytic teachings are unacceptable to the medical profession and other professions having to do with the up-bringing of children.

K. G. GRAY, M.D.,
Toronto.

ABNORMAL PERSONALITY AND TIME. By *Nathan Israeli*. (Lancaster: The Science Press Printing Company, 1936.)

"Despite psychiatric routine examination of space and time orientation, there seems to be very little objective information about time orientation, time estimation, behavior with respect to time." Thus Dr. Israeli introduces the problem which the whole book develops and clarifies. Case histories frequently record 'orientation to time, poor'; yet what the statement means has hardly been considered. The processes which result in time disorientation, and the various degrees and forms of disorientation with different patients, and in different diseases, may have been subjects of speculation; but they have been only to a very slight extent the object of scientific investigation. Yet, since our orientation in time is one of our most fundamental ways of keeping contact with reality and the social world, disorders in this sphere, as Dr. Israeli indicates, underlie most of the psychoses.

As Dr. Murphy points out in his introduction, the viewpoint which we have taken in regarding time has shown us but half the sphere. We have examined the patient's past up to the present moment, and have discovered what he could remember therein. The past may be a sufficient aspect of time for the historical and physical sciences; but man lives in a time which includes both a past and a future; and it may be that the latter determines and defines his activities with the greater influence. (In fact one of the experiments included in this book shows that, for college students, the future is 12.7 times as important as the past.) Dr. Israeli emphasizes this forward going aspect, the foresight, the planning, the designs we make for the future and the relationship between these plans and the future we actually expect to realize. The ingenious method of "future autobiographies," which the author devised, in which the subjects are asked to write the story of their life from the viewpoint of some future date, opens a new approach to the experience of time; and, combined with interview material, differentiates among the patients suffering in various stages and with different types of mental illness. While there is no clear demarcation between various clinical classifications, Dr. Sands' foreword summarizes some broad characteristics for various groups. "In the organic psychoses, distortion of time as related to memory is well known. To the schizophrenic, time value is often of no apparent significance. The depressed patient is constantly indulging in self criti-

cism because of distortion of time in the past. The manic patient boasts of what he will accomplish in the future. The neurotic is unable to meet realities of the present and despairs of the future." The "future autobiographies" of the psychotics are contrasted with those of superior high school students. Similarities between the students and psychotics who are constructive in their outlook are noted.

The values of this highly stimulating little book are many; three, perhaps, may be selected for comment here. (1) The author brings to our attention the need of investigation behind the shibboleth "orientation to time, poor." He indicates the need for a psychological approach to the problem of time, for its study not only in the abnormal forms but also for a genetic picture of its development. (2) The author indicates some of the particular types of time disorder found among abnormal personalities and the relationship of these with time values in the normal. (3) He has devised a method ("future autobiographies") as a means of investigating this difficult field, and any reader who is interested in time will immediately see ways in which this method may be used with other types of subjects, under other conditions for gaining insight about time and the individual.

By way of criticism it might be suggested that while the book is extremely clear, it is astonishingly brief, and that the reader who is unfamiliar with the work would like to have many points expanded more fully. Also there is no mention of the relation of the subject's time orientation and the memories he retains of his past life. This is, perhaps, another problem; but one feels, that while Dr. Israeli has made a much needed swing in outlook by emphasizing future rather than past, yet as these are but somewhat arbitrary divisions of the same dimension, the relationship between them is of extreme interest and one about which the author's research should have some valuable data.

M. L. NORTHWAY,
University of Toronto.

DIE STÖRUNGEN DES PERSÖNLICHKEITSBEWUSSTSEINS UND VERWANDTE
ENTFREMDSERLEBNISSE. By Dr. med. habil. Karl Haug. (Stuttgart:
Ferdinand Enke, 1936.)

In this monograph Haug offers a new concept of the phenomena of depersonalization and unreality. It is an attempt to explain the mechanisms operating in the changes of self-awareness in normal people and in the so-called functional and organic psychoses. Depersonalization, according to Haug, has its origin not in the disturbances of the conscious psyche but rather in the changes at the neurophysiologic level. This concept is essentially an outgrowth of the theory of Melchior Palagy who contrasts the psychic activities such as the process of consciousness proper with the continuous flow of life processes which, according to him, are independent of consciousness. Palagy believes that mental diseases are not necessarily due to disturbances of the mind (*Geist*) but have their origin in the disease of the "vital fantasy" (*Erkrankungen der vitalen Phantasie*). In his "*Naturphilosophische Vorlesungen*" Palagy points out what he calls "the mistakes of all mistakes";

"The source of possibility of all human mistakes is to be sought in the fact that we may consider for psychic something which is only living and for living which is merely psychic. The mistaking of vital process for psychic activity is the mistake of all mistakes." This is the basis on which Haug builds his conception of depersonalization and which also serves him as a foundation for a general theory of psychoses.

In the first chapter the author discusses the older theories of depersonalization. He recalls the fact that Krishaber was the discoverer of phenomenon in 1873, although the term was coined later by Dugas in 1898. He gives, however, credit to Krishaber for advancing a pathophysiologic hypothesis as an explanation of the phenomenon. He reviews the contributions of the contemporary investigators. However, he criticizes the genetic psychologic interpretation as postulated by Storring, Schilder, and others, and briefly touches upon the one-sidedness of the psychoanalytic interpretation. Following a discussion of the frequency, nosology, and the meaning of the phenomenon of depersonalization the author goes at great length into the pathogenesis from a pathophysiologic point of view. Utilizing Wernicke's classification of disorientation Haug by analogy considers three types of depersonalization: the autopsychic, the somatopsychic, and the allopsychic. The greater part of this monograph is taken up with the casuistic material and the epicritic discussions and it must be said that no psychiatric entity is neglected. Numerous cases are cited starting with post-traumatic psychoses, down through the whole gamut of the organic reactions, and the endogenous psychoses. The occurrence of this phenomenon under normal conditions and in geniuses is also discussed at length. In manic-depressive psychoses it occurs relatively often. The content is determined by the "objective" psychopathologic disturbance. In the circular type the unreality experiences are of the autopsychic and allopsychic nature, while in hypochondriasis the somatopsychic type is more frequent. The feeling tone is not always a disagreeable one; in fact, in the manic phase it is often a feeling of happiness. In the circular type the phenomenon is rather fleeting in nature and not fully developed. The author believes that the reason for this has to be sought in the nature of the manic and depressive processes; while the stormy course of the manic attack does not permit a protracted persistence of the phenomenon, in the depressions the intrapsychic blocking is too great to permit self-observation. When, however, the manic or the depressive basic disturbances are not too intensive then depersonalization-like experiences may take place. This may occur in a certain phase of the transition of one affective state into another. If in the circular type this transition is protracted there may occur a state of depersonalization instead of a true depression. He believes that Schafer's psychic anaesthesia or "melancholia anaesthetica" are examples of this type. He looks for the cause of depersonalization in manic-depressive psychoses, partly in the content and partly in the psychopathology and the pathophysiologic basic disturbances. These are primary disturbances of action, affect, and occasionally disturbances in the clearness of consciousness. Disturbances in apprehension and perception or representation may lead to

allopyschic depersonalization-like experiences with all transitions down to false sense perceptions. In this connection he mentions Schilder's three cases of melancholia with autopsychic disturbances of the type similar to depersonalization.

The author believes that the phenomenon occurs more frequently in schizophrenia and occasionally it may dominate for a while the entire course of the disease. As a rule, however, depersonalization phenomenon in schizophrenia is of transitory character, mostly incompletely developed and of the abortive type. He feels that the occurrence of depersonalization in schizophrenia is of particular importance, especially in regard to the psychopathology of schizophrenia. His casuistic material seems to indicate that as a rule the phenomenon occurs in the prodromal or during the initial stages of the disease. It is absent in the end state, that is, in the state of deterioration. Another important observation is the frequency of depersonalization experiences in the presence of paranoid mechanisms. There seems to be an inverse ratio between the two manifestations. In paranoia depersonalization is practically absent. He cites cases in which the picture is so dominated by the depersonalization syndrome as to cause diagnostic difficulties. There are cases in which there is an acceleration of the schizophrenic process after a transitory phase of depersonalization. In these instances the original somato-psychic and allopyschic disturbances begin to take on the character of hallucinations and a vicious circle is established. The content of depersonalization depends upon the actual disturbances. The disturbances in thinking ability, feeling and volition, are expressions of the beginning of those disturbances within the autopsychic sphere which ultimately lead to intellectual and affective deterioration. The somatopsychic depersonalization complaints may be in part the initial stage of haptic hallucinations. Discussing the pathophysiological process which is at the base of the phenomenon he cites a few cases illustrating the lowering in the vegetative tonus.

Considering the psychopathological and pathophysiological bases of depersonalization Haug believes that while the phenomenon of depersonalization is a purely subjective one it cannot be looked upon as a real psychic manifestation. The fact that depersonalization may occur in all sorts of gross organic lesions should be sufficient reason, according to him, to look for the causes and the origin of this phenomenon in the so-called vital life processes. In support of this theory he invokes the fact that depersonalization does not occur in pure paranoia, a type of mental disorder which he concedes to be the only psychosis of pure psychic origin.

This cursory review merely touches the surface of a biologic dynamic conception of mental disorders derived from a study of the phenomenon of depersonalization.

J. NOTKIN, M. D.,
Poughkeepsie.

ADULT INTELLIGENCE: A PSYCHOLOGICAL STUDY OF TEST PERFORMANCES.
By *Theodore Weisenburg, Anne Roe and Katharine E. McBride.* (New York: The Commonwealth Fund, 1936.)

This book presents a critical survey of studies of adult intelligence, and the results of a series of investigations directed towards the establishing of norms of adult intelligence which would be applicable in clinical practice. Seventy hospital patients, selected as representing a good sample of the middle levels of the population, were examined by means of a very extensive battery of Language Intelligence Tests, Educational Achievement Tests, and Non-Language Tests. The advantages of hospital patients as subjects for researches of this kind are discussed; and the results presented deal with the evaluation of the various tests used, intellectual growth and decline, relationships between test performance and education, etc.

The investigation represents a continuation of Dr. Weisenburg's well-known studies on normal behavior as a basis for interpreting the abnormal. The survey of previous work will be found interesting and useful. The results of the research do not lend themselves readily to a brief discussion, partly because of difficulties arising from the nature of the group examined, and partly because of the breadth of the objectives of the study.

W. LINE,

University of Toronto.

SPEECH CORRECTION MANUAL. By *James F. Bender and Victor M. Kleinfield.* (New York: Farrar and Rinehart, 1936.)

This manual presents materials and methods that have been found useful by the authors in the speech rehabilitation of over two thousand speech handicapped students. This experience has been gathered mainly in the conducting of the Speech Clinic at the College of the City of New York, where major attention has been given to the speech problems of stammerers, lispers, "lallers" and foreigners, to faults of function rather than of organic lesions. The general point of view presented is one which stresses re-educational methods, and only a minimum of theory is offered. To supplement the present book, particularly on the theoretical side, and in regard to the personality motivation and social problems of the speech handicapped, the authors have prepared a companion volume *Approaching the Speech Correction Problem.*

The book is eminently practical. After a brief First Part, dealing with the breaking in of new speech habits, about two-thirds of the book are devoted to Part Two, in which 317 Practice Drills for Speech and Voice Improvement are given. Part Three supplements this with notes and useful hints on the drill materials. The whole appears to be very systematically arranged, and will undoubtedly be found very useful in articulatory and remedial work.

W. LINE,

University of Toronto.

JUVENILE PARESIS. By William C. Menninger, M.D. (Baltimore: Williams and Wilkins, 1936.)

This is a very complete review of the literature on the subject of juvenile paresis. The author has not only combed the literature of the world with great industry, but he has also arranged the material in a rather satisfactory way. He has massed the figures as they occur in the extant literature under the following headings: "Incidence; Sex; Age of Onset; Family History; Developmental History; Neurological Signs; Physical Complications; Descriptive Mental Picture; Psychology of the Juvenile Paretic; Laboratory Findings; Clinical Course; Treatment; and Pathology." Indeed, one may turn to this volume and find an abstract of almost everything that has been written. I say, "almost" everything because the chapter on pathology is not as complete or adequate as are the rest of the chapters in the book.

In addition to abstracting the literature and rearranging it, the author has used as a basis for his monograph, 43 cases that he has personally observed, many of which he has studied carefully and a number of which he has himself treated. In addition to the 43 personal cases, the analysis contains 610 recorded cases.

The volume therefore may be characterized as a good standard reference book containing most of the available information that has been previously published. By the very nature of the work it is not a book that makes easy reading. If one wishes to be somewhat carping in his criticism it may be stated that the book suffers from a plethora of information that has not been entirely well digested—not that it has not been combed over and organized into good tables and charts, but rather because it has not been a critical analysis of the value of the source material, and the reviewer feels personally in a position to make a strong plea against this type of summarization because he himself has grievously sinned in the same fashion. He feels that there is rather too much literature and too little author. For example, there is no criterion set forth as to what juvenile paresis is; where does one separate cases of asymptomatic neurosyphilis in a juvenile from juvenile paresis; where does one separate paretic phenomena in a setting of neurosyphilis. Similarly, when one comes to the matter of treatment, the conclusions drawn from the relatively small case material are not put to the test of what type of case was treated; how far advanced or what the actual effect of treatment was in the individual cases other than in the most general terms.

Nevertheless, as has already been mentioned, Menninger has produced a book to which any one wishing to study the problem of juvenile paresis must, of necessity, turn, and he will be rewarded with a wealth of material ready for his use.

HARRY C. SOLOMON, M.D.,
Boston.

THE 1936 YEAR BOOK OF NEUROLOGY, PSYCHIATRY AND ENDOCRINOLOGY.
Edited by *Hans H. Reese, M.D., Harry A. Paskind, M.D., Ph.D., and
Elmer L. Sevringshaus, M.D.* (Chicago: The Year Book Publishers,
1937.)

This valuable digest and reference work continues to grow; the present volume runs to 800 pages (neurology 302, psychiatry 182, endocrinology 288, indices 28), and contains 158 illustrations. The editors have displayed great industry and discrimination in selecting from the periodical literature of 16 countries 492 significant contributions as representing the year's progress in three interrelated fields of medicine.

Each of the three sections is prefaced by an editorial discussion of the outstanding studies in the special field. Dr. Reese mentions especially investigations in the regional function of the hypothalamus, Elsberg's quantitative olfactory tests in the diagnosis of intracranial lesions, allergic phenomena, biochemical-physical-constitutional studies.

In a first report of "psychosurgery" the amazing operation of leucotomy is described without editorial comment.

In the psychiatric section Dr. Paskind refers to the insulin shock treatment of schizophrenia as the liveliest topic of the year. He notes that observers in Vienna, where Sakel conducted his studies, have been favorably impressed, with the notable exception of Wagner-Jauregg. His warning against premature optimism is timely. "All factors considered, the time has not yet come for abandonment of an attitude of interested and amiable skepticism regarding the effects of insulin shock in schizophrenia."

"Electro-encephalographic investigations," Paskind remarks, "have not progressed beyond the plotting of waves. Where these waves originate and what produces and influences them remain a mystery, and until the problem is solved all attempts to attribute pathognomonic significance to these waves must be postponed."

Various aspects of psycho-somatic relationships and psychogenesis in organic conditions are presented in numerous reviews. Considerable space is allotted to Hyman's devastating criticism of psychoanalytic practice which appeared in the Journal of the American Medical Association, August 1, 1936.

A subsection is devoted to the psychiatry of childhood.

In introducing the section on endocrinology Dr. Sevringshaus suggests "that all endocrine activity be thought of as serving the functions of communication, correlation and catalysis." He illustrates by examples.

"Ultimately it seems certain that endocrinology must constitute not a separate branch of medicine, but a new aspect of biology, to be absorbed into all of medicine as biochemistry, nutrition and other contributions have been taken over. It is becoming the task of the clinician to understand these curious and useful catalysts made by the specialized organs called endocrine glands. As the clinical applications of endocrinology are appropriated by the various specialties, endocrinology will achieve its greatest contribution to the practice of medicine."

The year book series extending back to the beginning of the century furnishes a reliable and reasonably comprehensive history of the development of the field of medicine which falls within its scope.

C. B. F.

THE INDIVIDUAL CRIMINAL. STUDIES IN THE PSYCHOGENETICS OF CRIME.
By Ben Karpman, M.D. (Washington: Nervous and Mental Disease Publishing Co., 1935.)

In a previous work, "Case Studies in the Psychopathology of Crime," reviewed in the November, 1933, issue of this JOURNAL, the author set forth in great detail the life histories of five criminals. Through excellent cooperation the subjects themselves furnished this material, and the resulting volume was therefore a series of autobiographies with a minimum of comment necessary for clarification by the author.

The present work is supplementary to the first and supplies an analysis and interpretation of the five case histories. Taking case three as a sample, the discussion is divided into two parts: (1) Interpretational; (2) Diagnostic; followed by a third section which the author calls "Crime Mechanics." While not ignoring social, economic and other elements of the picture of crime, the main stress is upon its psychic factors. To this end the story begins with the pathogenic influences of early family relationship—alcoholism on both sides, a broken home when the boy was eight years old, doing a man's work at 14, a period of wandering, three enlistments in the army, a long history of sex irregularities and aberrations with pronounced homosexual phases, preparation for marriage at 21 terminated by the death of his fiancée and followed by a period of depression, marriage three or four years later to a much older, unattractive, unintelligent woman. Unethical conduct began in connection with the patient's activities as a homosexual male prostitute; at 17 he abused the confidence of his landlady whose husband he had supplanted, thereby profiting by \$700. He was drinking, associating with criminals, indulging in petty thieving and swindling; at 27 convicted of sodomy and imprisoned; reincarcerated after violating parole and automobile theft he developed a "prison psychosis."

After a careful analysis of personality traits and the light they throw upon the biographic events, the author takes up at length the possibilities of the psychiatric diagnosis, including both the personality diagnosis and the prison psychosis which was apparently an "acute anxiety attack, prison panic."

As one reads this history, full as it is, one finds many regrettable gaps in information; but it is safe to say no history was ever written in which there were not such gaps. The record shows however the tireless industry of the compiler and is probably as complete as it was possible to make it. At any rate it makes understandable in large part the life sequences of the patient-criminal and reveals the motivation for much of his abnormal behavior. There is a coherence to the story which makes the outcome expected if not inevitable.

"This case demonstrates the contribution of a certain type of homosexuality to crime. While homosexuality *per se* need not lead to any greater anti-social behavior than the particular paraphilia it often does for other reasons involve the individual in many social difficulties. In the present case the anti-social behavior appears to have been conditioned partly on the broken home

situation and partly on the homosexual situation proper—his prostitution and swindling of his sexual partners."

Under "Crime Mechanics" the author discusses in connection with cases 3, 4 and 5 the legislative causes of crime, some social factors in crime, the effects of imprisonment and the sequels of discharge, the subject's attitude toward other criminals and theirs toward him, including some "incisive comments on crime and criminals" by one of them.

Each case is summarized in a personality life chart or psychobiopsy, with two supplementary fold-up charts (requiring patience to refold) showing in elaborate detail the psychotic history of case 5.

The book is well indexed and there is also an index to criminal jargon. The present volume and its predecessor taken together constitute a unique and decidedly valuable contribution to criminology and psychopathology.

C. B. F.